Joey Christ
Alabama’s 2002 Co-op Student of the Year

Joey Christ, 2002 Co-op Student of the Year for UAH and the state of Alabama, will graduate in May 2003 with a bachelor's degree in Electrical Engineering.

His employer, ADTRAN, nominated him as a candidate for UAH Co-op of the Year, which he won. He went on to win the competition for the Alabama Cooperative Education Student of the Year, which he won. He went on to win the competition for the Alabama Cooperative Education Student of the Year, a prestigious honor awarded annually by the Alabama Association of Colleges and Employers (AACE), a consortium of cooperative education, career services, and employers that provides information on employment opportunities for students and graduates of Alabama colleges and universities.

He is now a candidate for the National Cooperative Education Student of the Year. The winner will be announced on January 8, 2003.

Cooperative Education is an academic program that combines classroom study with practical work experience directly related to a student's major. This is accomplished through a three-way partnership among employers, students, and the university. The UAH Co-op Program has been providing students with major-related work experience for nearly 25 years. Adtran's Co-op partnership with UAH began in 1990.

Joey signed up for the Cooperative Education program as soon as he began attending engineering classes at UAH. His entire Co-op work experience has been at ADTRAN, Inc., in Huntsville. ADTRAN designs, develops, manufactures, markets and services a broad range of high-speed digital transmission products used by telephone companies and corporate end-users to implement advanced digital data services over existing telephone networks.

Joey's first semester at ADTRAN was spent working in the component engineering group. His duties included attaining data sheets for varying electrical components used on ADTRAN products. Shortly afterwards,
Chair’s Corner (continued from page 1)

As for the social responsibilities of engineers, President Hoover again sums it up best: *The great liability of the engineer compared to men of other professions is that his works are out in the open where all can see them. His acts, step-by-step, are hard substance. He cannot bury his mistakes in the grave like the doctors. He cannot argue them into thin air and blame the judge like the lawyers. He cannot, like the architects, cover his failures with trees and vines. He cannot, like politicians, screen his shortcomings by blaming his opponents and hope the people will forget. The engineer simply cannot deny he did it. If his works do not work, he is damned... On the other hand, unlike the doctor, his is not a life among the weak. Unlike the soldier, destruction is not his purpose. Unlike the lawyer, quarrels are not his daily bread. To the engineer falls the job of clothing the bare bones of science with life, comfort, and hope."

It is an honor to be the chair of a department that offers computer, electrical, and optical engineering degrees. Ours has the largest enrollment of any ECE department in the State of Alabama. The department enrolls about 600 undergraduate and 250 graduate students, a total of 850 students. The undergraduate computer engineering students now outnumber electrical engineering students. Our graduate enrollment saw a big jump this Fall. This partially due to our new Master of Science in Software Engineering program and to an increase in industry participation in enlisting our graduates.

Our programs will be reviewed by ABET in Fall of 2003. Our faculty, staff, and students have been involved in assessing our courses. Starting this semester, our students in each course will receive a new Student Course Assessment form at the same time as the SIE form. A copy of the Student Assessment form is shown below. I would like to ask each student to complete this form as sincerely as possible. The information provided to the department on this form will be of a great help in assessing the course and improving it.

---

**ELECTRICAL AND COMPUTER ENGINEERING**

**STUDENT COURSE ASSESSMENT**

Course: _______________________________ Instructor: ______________ Term: ________ Year: ____________

Please check (✓) one of the following six indicated responses.

<table>
<thead>
<tr>
<th>Strongly agree with the statement</th>
<th>Agree with the statement</th>
<th>Neutral (from slightly agree to slightly disagree)</th>
<th>Disagree with the statement</th>
<th>Strongly disagree with the statement</th>
<th>No basis to judge</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Assessment Statements**

(a) This course required me to apply:
   1. Mathematics
   2. Science
   3. Engineering

(b) This course has provided me the ability to do the following:
   1. design experiments
   2. conduct experiments
   3. analyze data
   4. interpret data

(c) This course has provided me the ability to design:
   1. a system
   2. a component
   3. a process

(d) This course has provided me the ability to function on multi-disciplinary teams

(e) This course has provided me the ability to:
   1. identify engineering problems
   2. formulate engineering problems
   3. solve engineering problems

(f) This course has provided me the understanding of:
   1. professional responsibility
   2. ethical responsibility

(g) This course has provided me the ability to do the following:
   1. written communication
   2. verbal communication

(h) This course has provided me the broad education necessary to understand the impact of engineering solutions in a global and societal context

(i) This course has provided me the recognition of the need for, and an ability to engage in life-long learning

(j) This course has provided a knowledge of contemporary issues

(k) For engineering practice, this course has provided me the ability to use:
   1. techniques
   2. skills
   3. modern engineering tools
ECE Graduate Student News

Saikat Saha
Ph.D. Student


Sin Ming Loo
Ph.D. Student


[Sessions 8B Re-usable Launch Vehicles -- Awarded Best Paper of Session]


In addition, Sin Ming Loo has co-authored 8 technical manuals with Professor B. Earl Wells on parallel programming, rapid prototyping, Altera, Xilinx design tools, and Handel C.
Introducing

Dr. David Coe
Assistant Professor

Dr. David Coe joined the ECE Department Faculty in August 2002 as an Assistant Professor.

Dr. Coe received both his Ph.D. and M.S. in Electrical Engineering from the Georgia Institute of Technology in 2002 and 1991, respectively, and his B.S. in Computer Science from Duke University in 1989.

As an employee of the Georgia Tech Research Institute, Dr. Coe has worked as computer programmer, writing C and Prolog programs in support of the ATESSSE project that automated the generation of test code for mixed analog/digital circuits. Subsequently, Dr. Coe designed CMOS opto-electronic interface circuits as part of an effort to develop an optically reconfigurable microprocessor. His most recent research included the fabrication and testing of pneumatically actuated, microvalve arrays for modulating synthetic jet airflow. Dr. Coe’s current research interests include the fabrication of integrated microsystems, the development of MEMS biomedical systems, distributed sensing using microsensor systems, and the investigation of alternative power sources for microsystems.

In his spare time he enjoys swing, ballroom, and county-western dancing.

Introducing

Dr. David Pan
Assistant Professor

Dr. David (Wendi) Pan joined the ECE Department in August 2002 as an Assistant Professor.

Dr. Pan received his Ph.D. degree in Electrical Engineering from the University of Southern California in 2002, and M.S. degree in Computer Engineering from the University of Louisiana in 1998, respectively. Dr. Pan has industrial research experience with AT&T Labs – Research and Advanced System Labs of ST Microelectronics.

Dr. Pan has been working in the fields of image and video coding, wireless communications and VLSI architectures. His recent research is focused on variable complexity algorithms in transform video coding, and proxy-based network computing. He is currently studying adaptive computation control in Fano decoding algorithms over memoryless and fading channels. Also, he is interested in developing novel low power VLSI architectures for digital signal processing and wireless communications applications.

In his spare time, he likes playing tennis and jogging.

Joey Christ, Alabama’s 2002 Co-op Student of the Year
(Continued from page 1)

Joey was qualifying new parts to be used on the company's products. During his second semester, he worked in product qualification, and spent a great deal of time reading books and watching tutorials, learning about the basics of networking.

“Exact tests had been run many times on the same products,” Joey said. “My job was to take new codes from the design engineers and see how the new codes performed in the products. Working in product qualification gave me a big advantage over other engineering students, because I dealt with the technologies that we discussed in class.”

Joey was selected by ADTRAN to be a Co-op ambassador at the university. He has helped set up information seminars for prospective Co-ops, and represented ADTRAN at Engineering Open House, a special event for high school students.

“I have encouraged every student to apply for the Co-op program and work diligently in their classes as it will help them to get better jobs. I tell students about how the UAH Co-op program has benefited me in a multitude of ways,” Joey said. “I have had several great opportunities because of my Co-op experience. The hands-on knowledge that I have attained while working has helped me get better grades in several classes. Most importantly, the money that I have earned as a Co-op has given me the opportunity to buy a home.”

Joey also set up and presented a slide show for engineering faculty regarding his Co-op experience at ADTRAN. He loves his work at ADTRAN but also promotes the benefits of Co-op to any student he meets. He is a natural salesman.

When he is a guest speaker at the orientations conducted in the Co-op office, the students do not want him to stop talking. His enthusiasm for his job and his professional manner have excited many students who have joined the Co-op program.

“Joey demonstrates the enthusiasm and initiative of Co-op students, and it is a pleasure to work with him,” said Suzanne Norris, director of the UAH Cooperative Education Program. “Prospective students have gained first-hand insight into Co-op through Joey's willingness to promote the benefits of the program. He is an excellent ambassador for Co-op and UAH.”

During Joey's third semester at UAH as a Co-op student, he worked in ADTRAN's compliance group. “Compliance is responsible for conducting tests that measure emissions radiated from products,” he said. “That is, how resistant a product is to other emissions, and how electrostatic discharge affects products.”

Continued on page 5
Professor Nagendra Singh received a UAH 15-year Service Award at the Spring 2002 awards luncheon.

Using a fully 3-D parallel PIC code, Singh led the work at UAH on the nonlinear evolution of fast lower hybrid waves in space plasmas. This work contains the first fully kinetic treatment of nonlinear evolution of the parametric instabilities driven by fast lower hybrid waves in space.

Singh’s most significant contribution is the modeling and simulation of the electrodynamics of the tethered satellite in NASA’s pioneering experiments on electrodynamic tethers in space. A tether orbiting in the ionosphere cuts across Earth’s magnetic field and can generate a large EMF. If the ends of the tether make a good contact with the plasma enabling it to draw a sufficiently large current from the ionosphere, it can be used in space for generator and motor action. In order to prove the feasibility of this concept, NASA flew two missions known as the tethered-satellite-system, TSS-1 and TSS-1R. In these missions the tethered satellite at the top end, biased at a large positive voltage, acted as a current collector.

The problem of the electrodynamics of a high-voltage satellite in space is formidable for analytical theory, if not impossible. Because of Singh’s extensive experience in modeling and simulation of space plasma phenomena, he was invited to be a co-investigator on the science team for the TSS-1 project and was charged with the task of developing simulation models for the electrodynamics of the high-voltage sheath of satellites in low Earth orbit.

He has performed a systematic study on several aspects of this problem, culminating in a first comprehensive state-of-the-art model. The model is fully three dimensional (3-D) and is based on the particle-in-cell (PIC) technique. This model predicts many of the features of the plasma electrodynamics measured during the TSS-1R mission, including the properties of the electron and ion flows, current in the plasma contributing to the current collection, I-V characteristics, and the distribution of current collection on the satellite surface.

In addition to the 3-D simulations, Singh was first to develop time-dependent models for the plasma discharge of intentionally released gases near a high-voltage satellite for the purpose of enhanced current collection. These investigations revealed for the first time a highly dynamic sheath with imbedded double layers in an expanding dense plasma.

The development of the 3-D model for the tethered satellite is an outgrowth of Singh’s 34-year research experience with theory, modeling, and simulation of space plasmas, resulting in more than 130 publications in refereed journals and magazines.

In view of the success of the 3-D model of the tethered satellite, Singh was invited by Dr. Moore of NASA/GSFC to model the Plasma Source Instrument (PSI) aboard the POLAR satellite. This instrument controls the positive potential on the satellite surface by ejecting an ion-rich Xe plasma. This model played a key role in a decision by NASA to continue the operation of the PSI. His work on ion detectors aboard a satellite having narrow acceptance angles has been the basis of the software package used at NASA/MSFC for analyzing data from the Dynamic Explorer I satellite.

His work on a wide range of topics, such as antennas in space plasmas, double layers, large-scale plasma flow, and application of parallel computing to space plasma PIC codes, are all trend-setting in their respective fields.

2002 Co-op of the Year, Joey Chirst

(Continued from page 4)

“Joey's work effort exceeded the level of the normal co-op, and he took on engineering tasks that would be expected of a more experienced Co-op,” said Jeff Whitmire, manager of regulatory compliance at ADTRAN. “The one thing that was always present was Joey's willingness to take on any task, no matter how mundane, and see it to completion. He showed initiative to take some of these tasks beyond our expectations.”

Joey and his new bride, Emily, live in Elkmont. In his spare time, Joey enjoys basketball, baseball and football. He is very involved with his church and has done numerous service projects within his community.

Co-op display at Engineering Open House, November 1, 2002.
Helen Foster, Staff Assistant, received a UAH 10-year Service Award at the Spring 2002 awards luncheon.

Helen joined the ECE staff in 1992. She produced the first brochure for the department. Her duties include budget and accounting; travel coordinating; electronic purchasing; maintaining pictorial directory of faculty, staff, and distinguished ECE alumni; being responsible for all departmental Xerox accounts; planning and coordinating functions for the department, and assisting the chairman in day-to-day duties. She received the Linda M. Hooper Outstanding ECE Service Award in 2000.

Pat Smith, Staff Assistant, received the Linda M. Hooper Outstanding ECE Service Award in April 2002.

Pat has been on the UAH staff since 1984 and joined the ECE department in 1997 when Linda Hooper retired. Pat’s duties include scheduling classes for the ECE Department, ordering books for the department, maintaining and updating faculty files, distributing and preparing student evaluation forms for processing, maintaining undergraduate student files and helping to prepare paperwork for graduation. Pat also assists the chairman with appointments and various other duties.

Linda Mauldin Hooper retired from UAH and the ECE Department after 30 years of service, 28 of which were in ECE.

Upon Linda’s retirement from the university in 1997, gifts and pledges were received from faculty, friends and colleagues to establish the Linda Mauldin Hooper ECE Outstanding Service Award endowment.

For each period that the award is given, a committee reviews staff duties and recommendations made by the faculty. In 2000, the LMH award was given to staffers Helen Foster, Dennis Hite and posthumously to Illiana Chittur.

Linda Grubbs, Technical Secretary, received the Linda M. Hooper Outstanding ECE Service Award in April 2002.

Linda joined the ECE staff in February 1993 after working as a temp in the Dean’s office for five months. Linda’s duties include working with electronic communications media, typing drafts and formatting camera-ready copy for technical journal articles, conference papers, and preparing draft and final copies of NSF and NASA proposals and submitting them on the web sites. Linda also produces the ECE Dept. brochure and newsletter, *Real Time*, and added the duties of ECE webmaster in June 2002.

Our Family is Growing: Welcome Faculty Babies….

Marko Milenkovic, born September 2002

Mary English, born July 2002

Thomas Bowman, born August 2002
Laboratory News...

Dennis Hite, ECE Lab Manager

Those of you who did not attend classes over the summer, and have returned, probably noticed a few changes around the Engineering Building. Several of the ECE Labs including the Microcomputer Lab, IEEE Project Lab, Digital Signal Processing/Microcontroller Lab, Rapid Prototyping Lab, and Senior Design Lab have new Pentium 4 workstations. The College of Engineering General PC Lab (EB228) has 22 new Dell Pentium 4 workstations donated by COLSA.

In addition, the Digital Signal Processing/Microcontroller and Senior Design Labs have been outfitted with Agilent 100MHz MSO oscilloscopes, Agilent power supplies, and GDM Digital Multimeters. Several new Virtex-II Microblaze boards have been purchased for use in the Real-Time Systems Lab and 10 new Xilinx FPGA boards were added to the Senior Design Lab. This is all part of a department-wide equipment upgrade that is expected to cost over $300,000 during the next two years. Please take care of our new equipment and enjoy. I hope everyone will benefit from the upgrades.

I would like to take a moment to say many thanks to our Graduate Teaching Assistants. Thanks for doing your jobs with minimal supervision. Thanks for returning graded materials on time. Thanks for showing up for your labs on time. Thanks for helping by keeping the labs clean, organized, and promptly reporting problems to me. Thanks for being there when the department calls on you to perform duties outside your assigned duties. But most of all, thanks for having the courage to teach your students and letting them know you expect them to learn something in your class. I know that it is harder for you to teach than to simply disseminate information.

It takes planning, organization, and practice to be an effective instructor, and I commend you all for your efforts. Claudio Estevez, currently instructor for EE301 and EE305 labs, is an excellent example of the GTAs found teaching the ECE undergraduate laboratories. He reinforces his students learning experience with hands-on demonstrations. He describes one such demonstration here.

Claudio Estevez, GTA

“Teaching students about filters and their properties is no easy task, I was in their shoes just two years ago and I know what they are going through. I know now that if I can show them a filter in action, they can get a better “feeling” of how filters work. In this demonstration, that I did for my students, I connected my laptop to the trainer they use everyday. I built a first-order passive low-pass filter followed by an amplifying circuit (volume control). I connected the input signal and the filtered signal to the oscilloscope. The input signal was music, the output signal was the low frequencies of the music (bass). The students did not only see the output but they heard it also. This helps them understand a little bit better how filters work, and they get a better understanding what a graph represents in the frequency domain.”

Users of Engineering computer systems should know about the support web site at the address below.

Among the resources available are:

- an online help request
- the online account request
- online documentation for several software packages
- the Frequently Asked Questions page ("the FAQ")
- lab hours
- support news

http://support.eng.uah.edu
## Spring 2003 Electrical & Computer Engineering Course List

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hrs.</th>
<th>Short Title</th>
<th>Course</th>
<th>Credit Hrs.</th>
<th>Short Title</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical Engineering</strong></td>
<td></td>
<td></td>
<td><strong>Electrical Engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE100</td>
<td>3</td>
<td>Concepts in Digital Signals and Sys</td>
<td>EE510</td>
<td>3</td>
<td>Selected Topics/ECE</td>
</tr>
<tr>
<td>EE100L</td>
<td>0</td>
<td>Laboratory for EE100</td>
<td>EE516</td>
<td>3</td>
<td>Digital Electronics</td>
</tr>
<tr>
<td>EE201</td>
<td>1</td>
<td>Digital Logic Design Lab</td>
<td>EE521</td>
<td>3</td>
<td>Microcomputers (EE521L = Lab)</td>
</tr>
<tr>
<td>EE202</td>
<td>3</td>
<td>Intro to Digital Logic Design</td>
<td>EE522</td>
<td>3</td>
<td>Advanced Logic Design (EE522L = Lab)</td>
</tr>
<tr>
<td>EE300</td>
<td>3</td>
<td>Electrical Circuit Analysis I</td>
<td>EE527</td>
<td>3</td>
<td>Electromagnetic Waves</td>
</tr>
<tr>
<td>EE301</td>
<td>1</td>
<td>Electronic Measurement Lab</td>
<td>EE528</td>
<td>3</td>
<td>Analy &amp; Comp Methods Elec Engr I</td>
</tr>
<tr>
<td>EE305</td>
<td>1</td>
<td>Electronic Devices and Design Lab</td>
<td>EE532</td>
<td>3</td>
<td>Optical Systems Design</td>
</tr>
<tr>
<td>EE307</td>
<td>3</td>
<td>Electricity and Magnetism</td>
<td>EE534</td>
<td>3</td>
<td>Optical Fiber Communications</td>
</tr>
<tr>
<td>EE310</td>
<td>3</td>
<td>Solid State Fundamentals</td>
<td>EE550</td>
<td>3</td>
<td>Random Signals in Communication</td>
</tr>
<tr>
<td>EE313</td>
<td>3</td>
<td>Electrical Circuit Analysis II</td>
<td>EE553</td>
<td>3</td>
<td>Optic &amp; Photonic Systems Design</td>
</tr>
<tr>
<td>EE315</td>
<td>3</td>
<td>Intro Electronic Analysis &amp; Design</td>
<td>EE557</td>
<td>3</td>
<td>Bus &amp; VLSI Design</td>
</tr>
<tr>
<td>EE321</td>
<td>3</td>
<td>Computer Organization</td>
<td>EE560</td>
<td>3</td>
<td>Classical Control Design</td>
</tr>
<tr>
<td>EE328</td>
<td>3</td>
<td>Analytical Methods for Continuous-Time Systems</td>
<td>EE569</td>
<td>3</td>
<td>Electromagnetic Field Theory</td>
</tr>
<tr>
<td>EE330</td>
<td>3</td>
<td>Analyt Meth for Multivariable &amp; Discrete-Time Sys</td>
<td>EE570</td>
<td>3</td>
<td>Analog Circuit Design</td>
</tr>
<tr>
<td>EE341</td>
<td>1</td>
<td>Digital Signal Processing Laboratory</td>
<td>EE572</td>
<td></td>
<td>Optical Communications</td>
</tr>
<tr>
<td>EE410</td>
<td>3</td>
<td>Selected Topics: ECE</td>
<td>EE573</td>
<td>3</td>
<td>Radiation and Detectors</td>
</tr>
<tr>
<td>EE411</td>
<td>3</td>
<td>Electric Power System</td>
<td>EE583</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE412</td>
<td>3</td>
<td>Sr. Design Project: IEEE Car Project</td>
<td>EE585</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE416</td>
<td>3</td>
<td>Electronics II</td>
<td>EE593</td>
<td>3</td>
<td>Advanced VLSI Design</td>
</tr>
<tr>
<td>EE420</td>
<td>3</td>
<td>Random Signals &amp; Noise</td>
<td>EE594</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE421</td>
<td>3</td>
<td>Microcomputers (EE421L = Lab)</td>
<td>EE595</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE422</td>
<td>3</td>
<td>Advanced Logic Design (EE422L = Lab)</td>
<td>EE596</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE425</td>
<td>3</td>
<td>Intro to Control and Robotic Systems</td>
<td>EE597</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE426</td>
<td>3</td>
<td>Communication Theory</td>
<td>EE598</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE428</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
<td>EE599</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE436</td>
<td>3</td>
<td>Digital Electronics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE447</td>
<td>3</td>
<td>Electromagnetic Waves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE448</td>
<td>3</td>
<td>Analytical and Computational Methods Elec Engr I</td>
<td>EE600</td>
<td>3</td>
<td>VLSI Design II (with EE482L = Lab)</td>
</tr>
<tr>
<td>EE451</td>
<td>3</td>
<td>Optoelectronics</td>
<td>EE601</td>
<td>3</td>
<td>ST: Adv. Techniques in Microelectronics</td>
</tr>
<tr>
<td>EE453</td>
<td>3</td>
<td>Laser Systems</td>
<td>EE602</td>
<td>3</td>
<td>Optical Engineering</td>
</tr>
<tr>
<td>EE454</td>
<td>3</td>
<td>Optical Fiber Communications</td>
<td>EE603</td>
<td>3</td>
<td>Optical Engineering</td>
</tr>
<tr>
<td>EE468</td>
<td>3</td>
<td>Intro to Computer Networks I</td>
<td>EE606</td>
<td>3</td>
<td>Optical Engineering</td>
</tr>
<tr>
<td>EE494</td>
<td>3</td>
<td>EE Design Projects</td>
<td>EE607</td>
<td>3</td>
<td>Optical Engineering</td>
</tr>
<tr>
<td>EE500</td>
<td>3</td>
<td>Random Signals &amp; Noise</td>
<td>EE608</td>
<td>3</td>
<td>Optical Engineering</td>
</tr>
<tr>
<td>EE505</td>
<td>3</td>
<td>Intro to Control and Robotic Systems</td>
<td>EE609</td>
<td>3</td>
<td>Optical Engineering</td>
</tr>
<tr>
<td>EE506</td>
<td>3</td>
<td>Communication Theory</td>
<td>EE610</td>
<td>3</td>
<td>Optical Engineering</td>
</tr>
<tr>
<td><strong>Optical Engineering</strong></td>
<td></td>
<td></td>
<td><strong>Computer Engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPE534</td>
<td>3</td>
<td>Optical Fiber Communications</td>
<td>CPE112</td>
<td>3</td>
<td>Intro Comp Prog for Engrs (CPE112L = Lab)</td>
</tr>
<tr>
<td>OPE542</td>
<td>3</td>
<td>Physical Optics</td>
<td>CPE121</td>
<td>3</td>
<td>Fundamentals of Software Engr</td>
</tr>
<tr>
<td>OPE453</td>
<td>3</td>
<td>Laser Systems</td>
<td>CPE321</td>
<td>3</td>
<td>Computer Organization</td>
</tr>
<tr>
<td>OPE546</td>
<td>3</td>
<td>Radiometry, Detectors &amp; Sources</td>
<td>CPE336</td>
<td>3</td>
<td>Operating Systems</td>
</tr>
<tr>
<td>OPE555</td>
<td>3</td>
<td>Quan Theory &amp; Opt Prop of Solids</td>
<td>CPE337</td>
<td>3</td>
<td>Operating Systems Laboratory</td>
</tr>
<tr>
<td>OPE570</td>
<td>3</td>
<td>Opt &amp; Photonic Systems Design</td>
<td>CPE421</td>
<td>3</td>
<td>Microcomputers (CPE421L = Lab)</td>
</tr>
<tr>
<td>OPE632</td>
<td>3</td>
<td>Fourier Optics</td>
<td>CPE422</td>
<td>3</td>
<td>Advanced Logic Design (CPE422L = Lab)</td>
</tr>
<tr>
<td>OPE653</td>
<td>3</td>
<td>Optical Testing</td>
<td>CPE423</td>
<td>3</td>
<td>VLSI Hardware Desc Lang/Md/Syn</td>
</tr>
<tr>
<td>OPE654</td>
<td>3</td>
<td>Optical Testing</td>
<td>CPE424</td>
<td>3</td>
<td>VLSI Design II (CPE424L = Lab)</td>
</tr>
<tr>
<td>OPE670</td>
<td>3</td>
<td>Optics Design &amp; Manufacturing</td>
<td>CPE428</td>
<td>3</td>
<td>VLSI Design II (CPE428L = Lab)</td>
</tr>
<tr>
<td>OPE755</td>
<td>3</td>
<td>Adv Optoelectronic Devices</td>
<td>CPE448</td>
<td>3</td>
<td>Intro to Computer Networks</td>
</tr>
<tr>
<td>OPE799</td>
<td>3</td>
<td>Doctoral Dissertation</td>
<td>CPE451</td>
<td>3</td>
<td>Software Design &amp; Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE490</td>
<td>3</td>
<td>ST: Hardware/Software Computer Design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE495</td>
<td>3</td>
<td>Computer Engineering Design II</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE521</td>
<td>3</td>
<td>Microcomputers (CPE521L = Lab)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE522</td>
<td>3</td>
<td>Advanced Logic Design (CPE522L = Lab)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE526</td>
<td>3</td>
<td>VLSI Hardware Desc Lang/Md/Syn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE528</td>
<td>3</td>
<td>VLSI Design II (CPE528L = Lab)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE548</td>
<td>3</td>
<td>Intro to Computer Networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE550</td>
<td>3</td>
<td>ST: Hardware/Software Computer Design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE561</td>
<td>3</td>
<td>Parallel Algorithms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE625</td>
<td>3</td>
<td>CMOS Analog Circuit Design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE631</td>
<td>3</td>
<td>Adv Comp Systems Architecture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE690</td>
<td>3</td>
<td>ST: Wireless Networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE699</td>
<td>3</td>
<td>Master’s Thesis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE730</td>
<td>3</td>
<td>Selected Topics in Computer Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CPE799</td>
<td>3</td>
<td>Doctoral Dissertation</td>
</tr>
</tbody>
</table>

Please see an academic advisor before you register for ECE classes.

Check the web for updates: [http://www.ece.uah.edu/](http://www.ece.uah.edu/)

For information call: (256) 824-6316

Or inquire via email: eceinfo@ece.uah.edu

---

ECE Dept., UAH 8 Real Time, Fall 2002
Master of Science in Software Engineering

The Department of Electrical and Computer Engineering at the University of Alabama in Huntsville offers a new program, Master of Science in Software Engineering (MSSE), as a new degree program through the College of Engineering beginning January 2002. MSSE, computer science track, is offered through the Computer Science Department in the College of Science.

The Master of Science in Software Engineering in the Department of Electrical and Computer Engineering Department unconditional admission requirements are:

A Bachelor’s degree from ABET or CSAB approved programs with a minimum of 3.0 out of 4.0 scale, GRE Score of 1700, and TOEFL score of 600 (for international students).

Conditional admission may be granted to individuals who fail to meet one or more of the requirements for unconditional admission.

Prerequisites:
Coursework or demonstration of knowledge in:
- Programming in C, C++ or Java (CPE 112)
- Data Structures (CPE 212)
- Discrete Structures (CS 214)
- Algorithm Design and Analysis (CS 317)
- Operating Systems (CPE 336)
- Computer Architecture (CPE 431)

Experience in the development of a large scale, industrial strength software is highly desirable.

Program Structure

Program would be a 33 hour program
Program would include a significant controlled software development experience
Full Time students should allow two years to complete the program.

Planned Coursework for the Degree

I. Software Engineering Core (4 courses; 12 credits total)

- CS 650 – The Software Engineering Process
- Plus one of following three course sequences:
  - CS 652 – System and Software Requirements Methods
  - CS 658 – Software Project Management and Quality Assurance
  - CS 654 – Software Design Techniques and Tools
  - CS 551 – Object Oriented Software Development

II. ECE Department Capstone Courses (3 courses, 3 credits total)

- CM 601 – Communication for Engineers, one credit hour.
- EE 691 – Graduate Seminar I, one credit hour.
- EE 692 – Graduate Seminar II, one credit hour.

III. CPE or CS Software Design Studio (2 courses, 6 credits total)

Since the purpose of the design studio is to provide the student with opportunities to work on large-scale software design projects with real world implications, at least one member of the student's committee should be chosen from outside the department with industrial expertise in the design and/or management of large-scale software systems. The external committee member may also be chosen to provide domain expertise in an engineering discipline if such an experience is critical to a design studio project.

- CPE 656 /CS 666 Software Studio I
- CPE 658 /CS 668 Software Studio II

IV. CPE Core Courses (4 courses, 12 credits total and may not take more than two at 500 level)

Four courses taken from the following list or approved by the supervisory committee:

- CPE 538 – Real Time & Embedded Systems
- CPE 536 – Computer Systems Software.
- CPE 512 – Intro Parallel Programming
- CPE 548 – Introduction to Computer Networks
- CPE 501 – Software Design and Engineering
- CPE 561 – Translation Systems
- CPE 628 – Testing Hardware Systems
- CPE 631 – Adv Computer Systems Architecture
- CPE 633 – Fault Tolerant Systems Architecture
- CPE 648 – Advanced Computer Networks
- CPE 661 – Code Optimizations
- CPE 731 – Distributed Shared Memory Systems.
- CPE 726 – Tools for VLSI Design
- CPE 735 – Selected Topics in Operating Systems
- CPE 760 – Selected Topics in Compilers and Translation Systems

For More Information:

Contact ECE Department
Dr. Ned. Audeh, ECE Graduate Director
256-824-6316 or audeh@ece.uah.edu
Publications, Presentations and Awards

**ELECTROMAGNETICS**

**Nagendra Singh, Professor**

**Journal Article**


**Conference Papers**


**Contracts**


**HARDWARE & SOFTWARE ENGINEERING**

**Aleksandar Milenkovic, Assistant Professor**

**Conference Papers**


M. Milenkovic, A. Milenkovic, J. Kulick, "Demystifying Intel Branch Predictors," Proceedings of the Workshop on Duplicating, Deconstructing, and Debunking (held in conjunction with 29th ISCA), Anchorage, Alaska, May 2002.


**B. Earl Wells, Associate Professor**

**Conference Paper**


**S. M. Yoo, Associate Professor**

**Conference Papers**


**ELECTRON DEVICES**

**Fat Duen Ho, Professor**

**Journal Article**

Publications, Presentations and Awards

OPTICS

David Pollock, Assoc. Research Professor

Conference Paper


Organization Committee

Workshop on Satellite Instrument Calibration for Measuring Global Climate Change, University of Maryland Conference Center, November 12-14, 2002.

SIGNAL PROCESSING / COMMUNICATIONS

Charles Corsetti, Assistant Chair

Conference Paper


Laurie Joiner, Assistant Professor

Conference Paper


SOLID STATE

Timothy Boykin, Associate Professor

Journal Article


Invited Talk


News for Eta Kappa Nu

Dr. Gaede, the faculty advisor for Eta Kappa Nu, the Electrical and Computer Engineering honor society, has membership certificates for the following individuals in her office.


Please contact Dr. Gaede if you can help her get the certificates to these deserving students. She can be reached by phone (256) 824-6573 or email gaede@ece.uah.edu
Distinguished ECE Alumni

The ECE Department's Distinguished Engineer Alumni Wall honors those ECE graduates who have been selected each year to receive the UAH College of Engineering Distinguished Engineer Alumni Award for outstanding contributions in Electrical and Computer Engineering. Beginning in 2000, the award is given each spring to three distinguished alumni from each Department in the College of Engineering during the evening ceremony for the Order of the Engineer.

Masters of Science in Software Engineering

Our new Master of Science in Software Engineering received a big boost from the Software Engineering Directorate (SED) at AMCOM. In Fall 2002, the ECE Department began offering software engineering courses to a group of students who are employed at SED. The courses are delivered through the College of Engineering Distance Learning facility to the SED Building at AMCOM. The program is expected to last two years.

Welcome to the ECE Family

Wesley and Heather Walker welcomed Hannah F. Walker into the world on July 12, 2002. Wesley is an ECE Ph.D. student

We want to hear from you!

The ECE Department looks forward to hearing your views and your success stories. Contact us to share your news and comments about your career and interests. Your story should be sent to realtime@ece.uah.edu

UAH
The University of Alabama in Huntsville

Real Time
Electrical and Computer Engineering
The University of Alabama in Huntsville
Huntsville, AL 35899
Address Correction Requested