



BITS & PCs

COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

March 2001 Wright State University Dayton, Ohio 45435 Vol. 17 No. 6

Important Dates

- March 12
Last day of Winter Quarter classes
- March 13-17
Final Exam Week
- March 26
First day of Spring Quarter classes
- April 13
Last day to drop a class without a grade
- April 27
Last day for all but freshmen to drop a class with a record of "W"
- May 18
Last day for freshmen to drop a class with a record of "W"
- May 25
Last day to apply for August graduation
- May 28
NO CLASSES, Memorial Day
- June 1
Last day of Spring Quarter classes
- June 4-9
Final Exam Week
- June 9
Spring Commencement

National Engineers Week Events a Big Success

The College of Engineering and Computer Science played host to over 300 prospective high school students and their parents at the annual Open House on Monday, February 19th, to kick off E-Week festivities. The event featured a special presentation entitled "How to Choose a College," which explained the factors that should be considered when deciding on a school. This presentation also served as a platform for students and their parents to ask specific questions about Wright State University and the College of Engineering and Computer Science. The Open House also included self-guided tours of labs and demonstrations within each department. A special thanks goes out to the departments for all of their assistance in making the Open House a success.



Pictured (l-r): Dan Taphorn, Dick Rathbun, Tom Cliett, Marc Davis-Marsh.

On Wednesday, February 21st, the Russ Atrium served as the catwalk for the 2001 Nerd Fashion Show. The show was emceed by the King of the Nerds—Dick Rathbun. The three participants in this year's show were: Dan Taphorn, Tom Cliett, and Marc Davis-Marsh. Each had their own unique sense of style which proved they were all qualified participants. This year's recipient of the coveted Golden Pocket Protector Award went to the audience's favorite nerd, Marc Davis-Marsh.



Pictured: ASME members at Beaver-Vu Bowl

The American Society of Mechanical Engineers organized a Bowling Party at Beaver-Vu Bowl on Friday, February 23rd. Approximately 20 people were in attendance including Drs. Bethke, Grandhi, Lieh, and Wolff. A great time was had by all. Congratulations goes out to Rakesh Patel for the high score of the day.

The Trebuchet Contest also held on Friday, February 23rd concluded the week's events. This contest, coordinated by Dr. Joe Slater and the Department of Mechanical and Materials Engineering, brought 18 teams, of at least six high school students each, to the Student Union Atrium. The teams had to participate in a mock battle to test their trebuchets against the others. Each team brought four trebuchets and worked together to coordinate an attack while it tried to avoid being another team's target. The winners of the trebuchet contest were:

- First Place** - Kenton Ridge High School, Instructor: Jeff Mills
- Second Place** - Springfield Catholic High School, Instructor: Mark Thoms
- Third Place** - Miami Valley Career Technology Center, Instructor: Joe Koenig

Visit us on the Web at <http://www.engineering.wright.edu>

The Fritz J. and Dolores H. Russ Prize Awarded



Earl Bakken and Wilson Greatbatch have received the Fritz J. and Dolores H. Russ Prize for their invention of the first human heart pacemaker. The prizes were presented at a dinner in Washington, D.C. on February 20, 2001. Modeled

after the Nobel Prize, the Fritz J. and Dolores H. Russ Prize is one of the top two engineering prizes in the world, awarding \$500,000, and recognizes outstanding achievement in the engineering field.

The pacemaker is most often used for relieving the symptoms of bradycardia. Bradycardia is a heart condition in which the heart beats fewer than 60 beats per minute, a rate that might not meet the body's demands. By stimulating the heart muscle with precisely timed discharges of electricity, a pacemaker causes the heart to beat in a manner similar to a naturally occurring heart rhythm.

"Each year, more than 400,000 pacemakers are implanted, extending and enhancing the quality of life of patients," said Robert M. Nerem, Director of the Parker H. Petit Institute for Bioengineering and Bioscience at the Georgia Institute of Technology in Atlanta, Georgia, and Chair of the Russ Prize selection committee. "Pacemakers help 2.5 million people worldwide, with Americans topping the list. Sales of the device have exceeded \$5 billion."

Earl Bakken co-founded Medtronic, one of the world's leading developers and manufacturers of therapeutic medical devices, including the pacemaker, with world headquarters in Minneapolis, Minnesota. Bakken served as Medtronic's Chief Executive Officer, Board Chair, and later Senior Board Chair, until his retirement as an officer in April 1989. Bakken continues to remain active in the company's business.

Wilson Greatbatch began developing the implantable pacemaker while at Taber Instrument Corp. in North Tonawanda, New York. His pacemaker was licensed to Medtronic, where it quickly received clinical acceptance in the medical world. Today, Greatbatch helps to advance research in the areas of genetics, nuclear power generation, and MRI-compatible pacemakers through his two most recent business ventures, Greatbatch Gen-Aid and Greatbatch Enterprises.

The National Academy of Engineering established the Fritz J. and Dolores H. Russ Prize in 1999. The award recognizes outstanding achievement in an engineering field that is currently of critical importance and contributes to the advancement of science and

engineering, as well as improves a person's quality of life and has widespread application or use.

The prize was established in October 1999 through a multimillion-dollar endowment to Ohio University from Fritz Russ, a 1942 engineering graduate, and his wife, Dolores. It was established to honor the profession of engineering and attract more men and women to the field.

NEW COURSES OFFERED for Spring Quarter in Computer Science and Engineering

CS 470/670 – SYSTEMS SIMULATION

Time: 4:10 - 5:25, Monday and Wednesday

Instructor: Dr. Matt Rizki

CS 790 – BIOINFORMATICS

Prerequisite: CS 600

Time: 5:25 - 6:50, Monday and Wednesday

Instructor: Dr. Michael Raymer

*For more information, contact the Department of
Computer Science and Engineering
at (937) 775-5131*

MATHEMATICS LEARNING CENTER

The MLC provides free, walk-in assistance to students enrolled in the following courses:

| | |
|-------------|---------|
| DEV 073 | MTH 130 |
| DEV 083 | MTH 131 |
| DEV 093 | MTH 228 |
| MTH 102 | MTH 229 |
| MTH 126/127 | MTH 230 |
| MTH 128/129 | STT 264 |

The Center operates in two locations, 159 Russ and 240 MM. Interested students can find locations and hours for specific courses at:

http://www.wright.edu/univ_college/mlc

You're invited to attend an
Air Force Career Day
on

Tuesday, April 3rd

6:00 - 7:30 AM

McLin gym on the east side of the Nutter Center, near Gate #9. Air Force officers in a variety of career fields will be on hand to answer questions.

SCHOLARSHIPS AND FELLOWSHIPS

The United States Department of State is accepting applications for its William C. Foster Fellows Visiting Scholars Program for the 2002-2003 academic year. This federal program allows college and university faculty to spend a year conducting scholarly investigations that actively support negotiation and implementation of arms control, non proliferation and disarmament treaties and agreements. The State Department seeks visiting scholars from several fields including biology, chemistry, engineering, geology, mathematics, operations research, and physics. Selected applicants will be offered a full salary and benefits package, as well as a daily stipend during their assignment.

Interested faculty should submit a letter indicating the perspective and expertise they offer. Include in letter your SSN and tenure status. In addition, please submit a curriculum vitae, three letters of reference, and copies of two published articles. Please submit 6 copies of each article. Applications should be sent to:

Visiting Scholars Program
Room 4930, VC/TA
US State Department
Washington, DC 20520

The deadline for receipt of applications is March 31, 2001. For more information, call Annette Day at (202) 647-4153

The Society of Automotive Engineers (SAE) is accepting applications for the SAE Doctoral Scholars Forgivable Loan Program. This program provides funding to assist in the development of promising engineering graduate students and encourages them to pursue careers in teaching at the college level. The program is designed to help alleviate the shortage of engineering faculty by providing forgivable loans of up to \$5,000 per year for three years. One year's loan is forgiven for each year the recipient teaches engineering at an accredited engineering school. Deadline for applications is April 1, 2001. Applications and information are available at:

<http://www.sae.org/students/yanmar.htm>

The Society of Automotive Engineers (SAE) is also accepting applications for the Yanmar/SAE Scholarship. This scholarship will be awarded to an upcoming college senior or graduate student pursuing a course of study or research related to the conservation of energy in transportation, agriculture and construction, or power generation, with emphasis on the internal combustion engine. One scholarship of \$2,000 will be awarded at the rate of \$1,000 per year. Deadline for applications is April 1, 2001. Applications and information are available at:

<http://www.sae.org/students/docschol.htm>

The National Collegiate Inventors and Innovators Alliance (NCIIA) is accepting applications for its

Advanced E-Team Grants. These grants fund innovative student team projects for product, technology and venture creation up to \$20,000. NCIIA grants help student teams:

- Develop and prototype new products and technologies with commercial potential
- Research the market and develop a business plan
- Perform patent searches
- Purchase equipment and supplies

Application deadlines for this year are May 15th and December 15th. Application forms are available on the NCIIA website at:

<http://www.nciia.org>

The Texas Space Grant Consortium and NASA are also accepting applications for *undergraduate scholarships*. These scholarships were established for junior and senior-level students interested in space-related education and research. The \$1,000 scholarships stress: above-average academic performance, participation in space education and research projects, and exhibited leadership qualities. Participation by members of underrepresented groups is encouraged. Applicants must be U.S. citizens. Applications must be submitted by 5:00 PM on April 6, 2001. For more information and an application, visit <http://www.tsgc.utexas.edu/grants>.

The Professional Engineers in Government, a practice division of the National Society of Professional Engineers, announces its 2001 Management Study Fellowship. This \$2,500 fellowship is awarded annually to an engineer pursuing advanced studies in the field of management. It is available to any Engineer Intern or licensed Professional Engineer from any discipline. Applicants who are not U.S. citizens may apply if they are current NSPE members. The application must be submitted to NSPE/PEG and be postmarked no later than March 15, 2001. For additional information and an application form, visit the NSPE web page at:

<http://www.nspe.org/awards/ab2-awfel.asp>

Air Force ROTC offers \$15,000/year scholarships to all qualifying *undergraduate and graduate* engineering students. To qualify, students must be a United States citizen, a full time student, graduate before their 27th birthday, meet physical requirements, and have at least a 2.5 cumulative GPA. Besides tuition and money for books, scholarship recipients also receive a \$250+/month tax-free allowance. After graduation, you will be able to work with the most advanced technology in the world and become a highly sought after manager/professional. There is no obligation to try it out, and you don't have to be on scholarship to be in our program! For additional information stop by 232 Fred A. White HC, call ROTC at (937) 775-2730, or visit their web site at:

www.wright.edu/academics/prog/rotc

Bourbakis Named Director of ITRI



Nikolaos G. Bourbakis has been named Director of the Wright State University Information Technology Research Institute (ITRI), a cooperative research and development organization involving partnerships between Wright State University and the Miami Valley's industrial and governmental organizations involved in the information technology field. The Institute's goal is to conduct basic and applied research and to reduce the time for university research results to reach the marketplace. ITRI will include research and development in such areas as human computer interaction, multimedia database, software engineering, intelligence and multimedia information systems, parallel processing, distributed computing, networking, and bioinformatics/bioengineering and will be multi-disciplinary in nature. ITRI is located within Wright State University's College of Engineering and Computer Science and is associated with the Department of Computer Science and Engineering. As Director, Dr. Bourbakis will initiate, stimulate, support, and actively pursue research and development initiatives and collaborative projects both within the university and with area companies.

Dr. Bourbakis comes to Wright State University from SUNY at Binghamton, where he served five years as Associate Director of the Center for Intelligent Systems. He was also Professor of Electrical Engineering and a faculty member of the Computer Science Department at SUNY-Binghamton and a Professor and Lab Director at Technical University of Crete, Greece.

Dr. Bourbakis' industrial experience includes service to IBM and Soft Sight. He is the founder and Vice President of the AIIS Inc. He pursues research in applied AI, machine vision, information security, parallel/distributed processing, and bioinformatics/bioengineering.

Dr. Bourbakis has served in a variety of positions within the professional community and has received a number of awards for his scholarly activities (IEEE Fellow, IEEE Computer Society Technical Research Achievement Award). He was the founder, General Chair and Program Chair of several International IEEE Computer Society Conferences-Symposia-Workshops (Tools with AI, Intelligence and Systems, Information Intelligence and Systems, Intelligence in Neural and Biological Systems, Expert Systems, Bioinformatics and Biomedical Engineering). He is the founder and EIC of the International Journal on Artificial Intelligence Tools. He is/was an Associate Editor and a Guest Editor in several international and IEEE Journals. He has served as a member in several IEEE Computer Society Committees. He received a B.S. from NUA and a Ph.D. from the University of Patras, Greece.

Applications are now being accepted for



DAGSI
Competitive

for the 2001-2002 academic year.

Scholarships provide full tuition for both full-time and part-time study in the M.S. and Ph.D. programs. Full-tuition scholarships with an annual assistantship (\$15,000) are available for full-time Ph.D. students.

Applicants must be admitted to the WSU School of Graduate Studies in an engineering or computer science program of study by March 15, 2001, in order to be eligible for these scholarships.

Completed DAGSI Competitive Scholarship applications must be submitted by 5:00 PM on March 15, 2001, to Room 405 Russ Engineering Center.

Visit

www.dagsi.org

to get a downloadable application form.

For more information, contact:

College of Engineering and Computer Science
Office of the Dean
405 Russ Engineering Center

BITs & PCs

College of Engineering and Computer Science
Wright State University



Dean

James E. Brandeberry, Ph.D., P.E.

Editor

Jenny Garringer

BITs & PCs is a monthly newsletter published by the College of Engineering and Computer Science to inform students about activities, news, opportunities and changes occurring in the College. It reports on the achievements of faculty and students; changes in organization, policy and curriculum; scholarship and employment opportunities; and engineering and computer science student club activities.

The current issue of *BITs & PCs* is available on the Web at <http://www.cs.wright.edu/bitsandpcs/>. Copies are also available in the College office, any Department office, literature racks in the Russ Center Atrium, Russ Center Study Lounge, or the Student Club Room.

The next issue of *BITs & PCs* will be published the week of April 2, 2001. To submit items for this issue, call the College of Engineering and Computer Science at (937) 775-5001, or send email to jgarringer@cs.wright.edu by March 19, 2001. The College of Engineering and Computer Science reserves the right to edit all material for publication.

The NSF/SRC Engineering Research Center for Environmentally Benign Semiconductor Manufacturing is accepting applications for summer research internships for undergraduates. The program will place students in research labs at the University of Arizona, University of California (Berkeley), MIT, Stanford, Arizona State University and Cornell for a period of ten weeks from June 4–August 10, 2001. A student stipend of \$3,500, housing and travel costs will be paid. Applications are due March 15, 2001. For more information (including application forms), visit the web page at : <http://www.erc.arizona.edu> or call or email Sally Clement, Education Coordinator, at (520) 626-6781, sclement@erc.arizona.edu.

The Power Generation Division of Propulsion Directorate at Air Force Research Labs is interested in a mechanical or electrical engineering student with good machine shop and software background. The student will initially be involved in designing a specimen holder for collecting current vs. voltage data at various magnetic fields of cryogenic temperatures (<70K). The student will also be writing or modifying software so that the data can be collected at various angles to the current flow direction. A working knowledge of commercial software programs like Labview is a plus. Interested students should contact Dr. Rama Nekkanti at (937) 429-4678 or via email at nekkanrm4@yahoo.com.

The Ford Motor Company will have some co-op opportunities for mechanical engineering students with a 3.0 grade point average during Spring Quarter. For more information, contact Jack Butler in Career Services at (937) 775-2556, jack.butler@wright.edu or send your resume to Marilou Shadoan, Ford Motor Company, 3000 Sharon Rd., Cincinnati, OH 45241.

The SOCHE Student Research Program has several positions for undergraduate and graduate students available in the Materials Lab at WPAFB. They offer flexible work schedules, career related work experience in their state-of-the-art labs and competitive wages (Soph. \$10.40/hr; Jr. \$11.65/hr; Sr. \$13.00/hr; Grad. \$15.90/hr). Applicants must be degree seeking students in good standing with U.S. citizenship. Positions available include the following:

Project No. 289 - Nondestructive Evaluation Support

Major: Physics, Electrical Engineering, Comp. Science
 Description: The student will need to learn existing inspection techniques, acquire data with them, and become familiar with what constitutes defects signals. It is likely that C++ algorithms will have to be written to convert data from one format to another and to analyze the data.

Project No. TBA - Development of Discontinuously Reinforced Ti Alloys

Major: Materials Science
 Description: The work involved with this project shall include: preparation of samples; mechanical

characterization of development alloys; preparation of metallographic samples; optical microscopy; scanning electron microscopy; X-ray diffraction and transmission electron microscopy. Analysis of the data collected will be performed.

Project No. 199B - High Cycle Fatigue of Titanium and Nickel Base Superalloys

Major: Mechanical Engineering
 Description: Experiments will be conducted on titanium and polycrystalline nickel base superalloys under High Cycle Fatigue (HCF) at different stress ratios to determine the crack initiation and propagation properties. Data will be collected and analyzed to determine stress states and criteria for crack initiation and extension. Finite element modeling of test geometries will be conducted.

Project No. 212B - Formulation, Processing, and Characterization of Aircraft Coatings

Major: Chemistry, Chem. Engineering, Materials Science
 Description: The work required in this project involves hands-on, in-house research of advance coating formulations and testing. This includes the formulation of advance primers and topcoats through the use of novel and commercial resins, hardeners, pigments, and additives. Characterization of the materials would include adhesion testing, gloss testing, scratch testing, spectroscopic methods and viscosity determinations.

Project No. 248B - Analysis of Stress and Strain Behavior of Ceramic Matrix Composites

Major: Mechanical Engineering, Materials Science
 Description: A round robin was performed in which nine laboratories conducted room temperature tension tests on a Nicalon fiber reinforced Silicon-Nitro-Carbide ceramic matrix composite. Each laboratory conducted ten tests, and the stress versus strain traces were provided electronically to AFRL/MLLN. Draft Test Standards from ASTM will be used. Work will require extensive use of computers, with emphasis of spreadsheets, macros, and statistical methods.

Project No. 253 - Characterization of Mechanical Behavior of Advanced Materials

Major: Materials Science, Mechanical Engineering
 Description: The focus of this research is to develop the life prediction methodology of advanced materials, such as titanium alloys, ceramics, matrix and metal matrix composites including investigation of damage mechanisms under various mechanical and thermal loads, as well as to understand the fretting fatigue and related cracking issues of high temperature titanium alloys when subjected to high cycle fatigues using experiments and mathematical model techniques.

Additional opportunities are listed on Page 8

FACULTY

A C T S

Henry Chen, Ph.D., EE, has been awarded professional development leave for 2001-2002 to collaborate with a world-class researcher at the University of California at Santa Barbara in the area of giga-transistor VLSI.

John Gallagher, Ph.D., CSE, received funding in the amount \$5,284 from the WSU Research Council's Research Challenge Early Start/Augmentation for his proposal entitled "Improved Telepresence in a WWW Autonomous Robotics Course."

A. Ardeshir Goshtasby, Ph.D., CSE, and Martin Satter, have received funding from Kettering Medical Center in the amount of \$85,962 for the proposal entitled "Nonlinear Brain Image Registration." Dr. Goshtasby also received an additional \$30,000 from Kettering Medical Center for the same proposal.

Craig Harvey, Ph.D., BIE, received funding in the amount \$18,750 from the WSU Research Council's Research Challenge Early Start/Augmentation for his proposal entitled "A Descriptive Model of Collaborative Engineering Awareness."

Jack S. Jean, Ph.D., CSE, has received funding in the amount of \$23,223 from Systran Federal Corporation for his proposal entitled "Image Processing Card for PC Based Simulators."

Nathan Klingbeil, Ph.D., ME, received funding in the amount \$12,192 from the WSU Research Council's Research Challenge Early Start/Augmentation for his proposal entitled "Development of Simulation-Based Crack Growth Models Toward "Virtual Life Prediction" of Aerospace Materials."

Chandler A. Phillips, Ph.D., David B. Reynolds, Ph.D., and Richard J. Koubek, Ph.D., BIE, have received funding in the amount of \$10,000 from the National Science Foundation, Research Experiences for Undergraduates for their proposal entitled "REU Supplement - Bioengineering Design Projects for the Disabled."

David B. Reynolds, Ph.D., BIE, has been awarded professional development leave for 2001-2002 to collaborate with Professor Mauro Ferrari at The Ohio State University in the areas of biomedical micro-electromechanical systems (BioMEMS) and biomedical nanotechnology (BioNano).

Ling Rothrock, Ph.D., BIE, received funding in the amount \$11,463 from the WSU Research Council's Research Challenge Early Start/Augmentation for his proposal entitled "Investigation of Adaptation Issues for the Generalization of a Command and Control Training and Experimentation."

Arnab K. Shaw, Ph.D., EE, has received funding from Veridian Engineering in the amount of \$36,049 for his proposal entitled "Controlling the Apparent Vocal Effort of Synthetic Speech."

J. Mitch Wolff, Ph.D., ME, received funding in the amount \$15,000 from the WSU Research Council's Research Challenge Early Start/Augmentation for his proposal entitled "Turbine Cooling Flow Investigation."

Bioinformatics: A Collaborative Effort

The Department of Computer Science and Engineering and the Department of Biological Sciences are joining forces to create a new option for computer science majors and a new minor for biology majors in the area of *bioinformatics*. Bioinformatics is an up and coming field of study. It generally involves the use of large sequence databases, their representation, analysis and appropriate storage for search, retrieval and display. Futures uses are likely to integrate additional applied medical aspects, including individualized DNA medicine and new imaging processes.

Bioinformatics emerged from the biological aspects of genetics and the artificial intelligence and database aspects of computer science. Research in bioinformatics is based on the relationship between gene structure within the context of a genome and the interactions within an organism. Genes control physical and chemical processes during the lives of all organisms. The same genes are found in a wide variety of species, although the number of chromosomes is different in each species. It is not known how many genes there are in the human genome, but estimates range from 20,000 to 100,000 with the most popular range being between 40,000 and 80,000.

The implications of bioinformatics research are far reaching in nature. Techniques may provide information that helps explain and improve the treatment of inherited and acquired diseases, provide a better environment, and aid in the fight against world hunger.

Sequencing the human genome involves arranging over 3 billion DNA bases in the proper order. The sequencing and subsequent analysis of the human genome is one of the most complex computational problems in the world today. Computer scientists are needed to handle, analyze, model, process, mine and search for retrieval in large genetic databases. The need for such people is large and this number will continue to grow. Analysts forecast that the market for genomics information will be \$2 billion annually by 2005.

The collaboration between the two departments has evolved out of the limited educational opportunities available to students, especially undergraduates, wishing to pursue a bioinformatics career. Graduate programs have begun to emerge across the nation, but are producing students at a rate less than the industry demand for bioinformatics specialists. The high demand has universities across the nation scrambling to

incorporate more bioinformatics study into their undergraduate curriculums.

The bioinformatics option is still in the planning stages, with the goal of being available for students during Fall 2001. Wright State is possibly the only university offering such an option for undergraduates. Dr. Oscar Garcia, Chair of the Department of Computer Science and Engineering, says that he is "very excited about the future possibilities within this growing field."

Interested students may contact the Department of Computer Science and Engineering beginning Fall Quarter 2001 for more information on this proposed option.

Outstanding CECS Alumni

Ronald Bullock, a 1970 WSU graduate in systems engineering, was chosen as the 2001 Outstanding Alumni Award winner from the College of Engineering and Computer Science. Bullock is president of Bison Gear & Engineering in St. Charles, Illinois, a manufacturer of gearmotors and reducers. Bullock is also president of Power Trans U.S.A. B.V., a distribution and light assembly facility in Zeewolde, Netherlands, and chairman of Bison Electric, a manufacturer of electric motors in Elgin, Illinois. Bullock is also a member of the CECS External Advisory Board.

Dr. Alonzo Patterson III, assistant dean for Minority Affairs in the WSU School of Medicine, was chosen as the 2001 Outstanding Alumni Award winner from the WSU Bolinga Black Cultural Resources Center. Patterson is a 1985 WSU graduate in biomedical engineering. Patterson is president of the Gem City Medical, Dental and Pharmaceutical Society. He is also a member of the National Association of Minority Medical Educators and a Fellow of the American Academy of Pediatrics.

Bret Hartzell, a 2000 WSU graduate in biomedical engineering, was featured in an article from the February 4th edition of *The Courier-Journal* in Louisville, Kentucky. Hartzell, currently a University of Kentucky rehabilitation engineer, has served as technology coach for Sara Mudd, a disabled student. NEMO, a voice-activated computer, is a device that can do what Sara's hands cannot. It can turn on lights, answer the telephone, change the TV channel, even adjust the thermostat—all via Sara's voice. To read the full article entitled "Command Performance," visit the newspaper's website at:

<http://www.courier-journal.com>

Employment Opportunitites continued...

Project No. 254 - Bi-directional Reflectance Distribution Function Measurement System

Major: Electrical Engineering, Physics

Description: Investigate the bi-directional reflectance distribution function (BRDF) of several different materials, including those used in land and space-based vehicles. The student will design the experiments, integrate test equipment, perform the experiments, analyze the test data, and conduct analysis based on the experiments. The student should have knowledge in the following areas: LabView, GPIB Programming, Matlab, optics, and radiometry.

Project No. 259 - Finite Element Material Fatigue Failure Predictions Under Turbine Engine Operating Condition

Major: Aeronautical/Mechanical Engineering, Comp. Sci.

Description: Assist in the analysis of various plate configurations acted upon by forcing functions during fatigue failure. This analysis will be carried out making use of an in-house finite element vibration code and the results will be compared with ABAQUS. The major goal is to develop a novel vibration-based method for assessing materials under fatigue loading in a turbine blade environment.

Project No. 263 - High Temp. Superconducting Wires for Power Generation: Pulsed Laser Deposition Plume Dynamics

Major: Electrical Engineering, Mat. Science, Physics

Description: The student would assist in one of two major research projects that are being undertaken: (1) develop

advanced optical diagnostics for process monitoring of YBCO deposition and (2) investigate plume dynamics and collisional kinetics to develop a better understanding of the gas phase mechanisms and film growth.

Project No. 273 - Characterization of Friction Stir Welded Materials

Major: Materials Science, Mechanical Engineering

Description: Friction stir welded aluminum based materials and titanium alloys will be analyzed for microstructure using optical and scanning electron microscopy. Heat treatments and microhardness measurements will be performed in the weld zones and compared to the base material to obtain relationship between microstructure and strength of the material.

Project No. 283 - HCF and Near-Threshold Crack Growth Behavior of Turbine Engine Materials

Major: Mechanical Engineering, Materials Science

Description: Experiments will be conducted on titanium and single crystal nickel base superalloys under HCF and mixed-mode loading utilizing a wide range of loading configurations. Data will be collected and analyzed to determine stress states and criteria for crack initiation and extension.

Interested students can get an application via the SOCHE website at: <http://www.soche.org>. Applications must be submitted with a resume and transcript. For more information, call (937) 910-5808.

Office of the Dean

3640 Colonel Glenn Hwy.
Dayton, OH 45435-0001
College of Engineering and Computer Science

