WRIGHT STATE UNIVERSITY

BITs & PCs

COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

April 2001 Wright State University Dayton, Ohio 45435 Vol. 17 No. 7

Important Dates

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

June 11
First day of class, Terms "A" and "C"

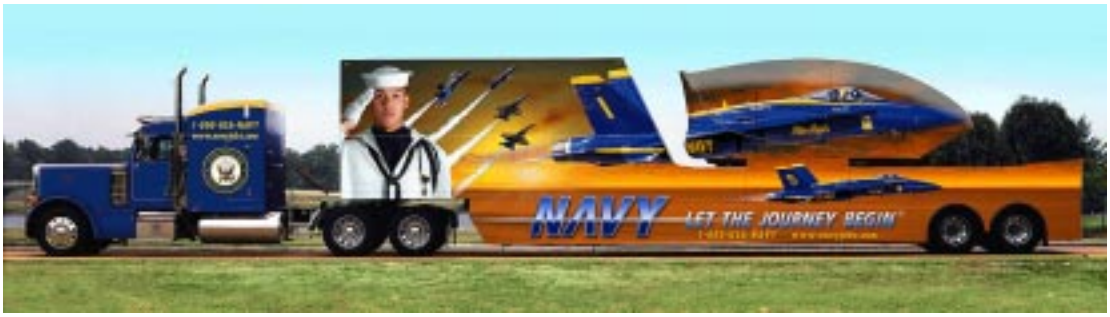
June 19
Last day to drop "A" class without a grade

June 28
Last day to drop "C" class without a grade

July 4
NO CLASSES, Independence Day

Navy Visits Wright State with Blue Angels Simulator

The U.S. Navy has applied motion simulation to its recruiting efforts in the United States. By employing state-of-the-art entertainment technology, the Navy's Recruiting Command can give guests a virtual flight with the Blue Angels.



Inside an 18-wheel, tractor-trailer truck, which is 65 feet in length and weighs 80,000 pounds, there is a theater with a custom-built, 20-seat motion pod, and high quality digital projection and audio systems. On the outside of the truck a 14-foot high image of the Navy's precision flying team is displayed. The audience is provided with a point-of-view perspective of the pilot, giving a person the sense of what it must be like to actually fly with the world-renowned squadron.

Navy Commander Steve Lowry, public affairs officer for the Navy Recruiting Command has said, "'A Ride with the Blue Angels' is an amazing experience, and is sure to generate excitement and enthusiasm for the Navy. We hope to capitalize on this by ensuring people have the opportunity to see what the greatest Navy in the world has to offer–skills training, travel, personal growth and education. We've got it all."

Development for this project began in early 2000 with a creative team comprised of people from U.S. Navy Recruiting, Pulseworks LLC, and Camber Entertainment, a simulator manufacturing company. The technical staff of Camber Entertainment and Navy Lieutenant Commanders Mark Brooks, an F-18 pilot, and Gary Simowitz, an F-14 radar intercept officer, worked to perfect the motion of the simulator to give the audience the most realistic ride possible.

If you are interested in experiencing what it feels like to fly with the Blue Angels come visit the Navy simulator between the hours of **9:00 AM and 5:00 PM on Friday, April 20, 2001 in Lot 17 (between the Russ Engineering Center and the Fred White Health Center).**

Puterbaugh Receives IGTI Scholarship

Pictured (l-r): Dr. Mitch Wolff presents Stephanie Puterbaugh with the $1,000 scholarship and certificate from IGTI.

The International Gas Turbine Institute (IGTI), a division of the American Society of Mechanical Engineers (ASME), awarded Stephanie (Stevie) Puterbaugh, currently a junior majoring in Mechanical Engineering, a $1,000 scholarship. Since initiating the scholarship program in 1986, IGTI has contributed a total of $903,500 in undergradaute scholarships.

While attending Beavercreek High School, Stevie earned the rank of National Merit Scholarship Commended Student and graduated salutatorian in 1998. During her freshman year at WSU, she received the Physics Award to the Highest Ranking Student in the General Physics Sequence. She has also received a Junior Ohio Space Grant scholarship.

Both of Stevie's parents are WSU College of Engineering and Computer Science graduates, receiving Bachelors of Science degrees in Systems Engineering/Mechanical Option in 1980. Her father, Dr. Steven Puterbaugh, teaches Mechanical Engineering courses here at WSU as an adjunct professor. Stevie is scheduled to graduate in June 2002 and plans to pursue a graduate degree in Mechanical Engineering.

Congratulations!

NASA Lunar/Meteorite Sample Education Project Visits WSU

The NASA Lunar/Meteorite Sample Education Project will be presented at WSU during Spring Quarter. The project/workshops are geared toward education on space flight technology and the space program, the history of the Apollo space missions, as well as the history and geology of the moon. Of course, it will also include viewing of the lunar/meteorite samples brought back to earth by the Apollo astronauts.

John Figueroa, a Senior studying Electrical Engineering, spear-headed this project with the assistance of Dave Hanna, the Wright State University Aviation Club, the Alpha Psi Lambda Fraternity interest group, and the Office of Disability Services. Members of all of the above mentioned organizations have committed to assisting with the presentation of the project, both to the university community as well as to the community schools. The group is also planning to bring local school children to the campus for presentations of the project.

The Johnson Space Center in Houston granted this loan of the project from March 15, 2001 to June 15, 2001. The entire university community is invited to come see these intriguing moon rocks and meteorite samples. They reveal not only clues to the origins of Earth and the solar system, but also to the origins of life itself.

Times and locations of the presentations will be posted throughout campus during the first part of Spring Quarter.

Those interested in seeing the project can contact John Figueroa via phone at (937) 432-1570 or via email at john.figueroa@wpafb.af.mil.

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 May 1, 2001. To submit items for this issue, call the College of Engineering and Computer Science at **(937) 775-5001**, or send email to **jgarring@cs.wright.edu** by April 23, 2001. The College of Engineering and Computer Science reserves the right to edit all material for publication.

SCHOLARSHIPS AND FELLOWSHIPS

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.

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

The National Inventors Hall of Fame is sponsoring The Collegiate Inventors Competition. The program is open to both undergraduate and graduate students. The goals of the programs are: to promote scientific problem solving and technology; to fuel a passion for economic prosperity; and to increase understanding of U.S. patent laws and intellectual property rights. The Collegiate Inventors Competition provides $20,000 to the top student inventors/teams and $10,000 to their advisors. Each year, up to six winners/teams are recognized. For entries to be eligible, the invention, idea or process must be the original work of a student team and an advisor. Judging is conducted by a panel of nationally recognized mathmaticians, scientists, environmentalists, biologists, and patent experts. Applications and information can be downloaded at:

http://www.invent.org/collegiate

The deadline for submissions is June 1, 2001. For more information, call (330) 849-6887 or e-mail collegiate@invent.org.

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

ITRI to Hold 2001 Spring Workshop

The Information Technology Research Institute will be holding its 2001 Spring Workshop on Friday, April 27, 2001 at the Holiday Inn located at 2800 Presidential Drive in Fairborn, Ohio. The proposed agenda is listed below. Those interested in attending the workshop must register by April 20, 2001. Registration forms are available on the CECS website at http://www.cs.wright.edu/itri/spring2001/regform.html or contact:

Leona Miller
Information Technology Research Institute
College of Engineering and Computer Science
303 Russ Engineering Center
Wright State University
Dayton, OH 45435-0001
Ph: (937) 775-5138
Fax: (937) 775-5127
e-mail: lmiller@cs.wright.edu

PROPOSED AGENDA

7:45 – 8:30 Registration

8:30 – 8:45 Opening Remarks

8:45 – 9:00 Overview of The Information Technology Research Institute and Future Actions

Nikolaos G. Bourbakis, Director, *ITRI*, Wright State University

9:00 – 9:45 The Ohio Plan (TOP)

Oscar N. Garcia, Chair, Computer Science & Engineering, Wright State University

9:45 – 10:15 Break

10:15 – 12:00 *ITRI* Research Projects

Bioinformatics: Computing for Pharmaceutical Drug Design Mike Raymer, CSE, WSU
Machine Olfaction: Advanced Excitation Methods for Inorganic Chemoresistors, R. Gutierrez, CSE, WSU
Algorithms for Design Recovery, Travis Doom, CSE, WSU
Web-based Interactive Models and Simulations, S. Narayanan, BIE, WSU
Multi-Modal Discourse Analysis, Francis Quek, CSE, WSU

12:00 – 1:00 Lunch Break Ball Room

1:00 – 1:45 Keynote Speech: TBA

Mr. Sam Coursen, Vice President and CIO, NCR

1:45 – 2:00 Break

2:00 – 3:40 *ITRI* Research Projects

Medical Image Analysis, Ardy Goshtasby, Computer Science & Engineering, WSU
Agent-Based Mixed-Initiative Collaboration, Mike Cox, Computer Science & Engineering, WSU
Data Mining of Niche Opportunities, Guozhu Dong, Computer Science & Engineering, WSU
Computer Assisted Document Interpretation Tools, T. K. Prasad, Computer Science & Engineering, WSU
Title TBA, Henry Chen, Electrical Engineering, WSU

3:40 – 3:50 Break

3:50 – 4:00 U. S. Patent and Trademark Depository Collection

Mr. Ran Raider, Wright State University Libraries

4:00 – 5:00 University, Industry and Government Partnerships

Dan Krane, Professor, Department of Biology, Wright State University
Rick Kitchen, President, Greater Dayton IT Alliance
Bill McQuay, Technical Advisor, Collaborative Simulation Technology Branch, Information Directorate, AF Research Laboratory

5:00 Closing Remarks

Employment Opportunities

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. 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.249A - Characterization of Titanium Alloy Microstructures
Major: Mechanical Engineering, Chemical Engineering Description: The microstructures and defects developed in titanium alloy samples processed via various novel or emerging microscopy and, in selected cases, transmission electron microscopy. The processes to be focused on include laser deposition, permanent mold casting, and advanced ingot-metallurgy (wrought) processes. The similarity and differences in microstructure developed by various processes shall be documented.

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.

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.278A - Hot Working of LasForm Titanium Alloy
Major: Mechanical Engineering,Chemical Engineering
Description: Research shall be conducted to determine the effect of process variables on the evolution of microstructure during the hot working of Ti-6Al-4V preforms produced by the industrial-scale Las Form (laser deposition) process. Subsequently, optical and scanning electron microscopy shall be performed on material in the as-forged and forged-and-heat-treated conditions to establish microstructure evolution. The observed microstructures shall be correlated to the forging deformation using nonisothermal finite-element analysis.

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.

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.

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.

Employment Opportunities

FACULTY FACTS

Abdul Awwal, Ph.D., CSE, has received additional funding in the amount of $10,000 from Oak Ridge National Laboratory for his proposal entitled “Fast Opto-electronic Floating Point Multiplication.” Dr. Awwal was also elected to be a Fellow of SPIE - The International Society for Optical Engineering. Fellows are distinguished individuals who have made significant scientific and technical contributions in optics and optoelectronics. In addition, they are recognized for their service to the general optics community and to SPIE in particular. Each new Fellow joins a prestigious list of over 392 SPIE members so honored for their contribution to their discipline and the Society since the Society’s inception in 1955. Induction of the new Fellows will take place at the 2001 Annual SPIE Meeting in San Diego, California in July 2001.

Nikolaos Bourbakis, Ph.D., ITRI, has received funding in the amount of $50,387 from Soft Sight, Inc. for his proposal entitled “Intellistitch AI: Intelligent Computerized Embroidery Design Automation for the Textile Industry.”

Ramana Grandhi, Ph.D., ME, has received additional funding in the amount of $54,000 from the Department of Defense and the Air Force Office of Scientific Research for his proposal entitled “Computational Mechanics Approach for Multidisciplinary Nonlinear Sensitivity Analysis.”

Marian Kazimierczuk, Ph.D., EE, has received funding in the amount of $15,000 from the National Research Council for his proposal entitled “Design of High-Efficiency Microwave Power Amplifiers with Polyharmonic Operation.”

Pradeep Misra, Ph.D., EE, has received funding in the amount of $21,660 from the Institute of Electrical and Electronics Engineers, Inc. for his proposal entitled “Development of IEEE Control Systems Society Web Site.”

Sharmila Mukhopadhyay, Ph.D., ME, has received funding in the amount of $90,000 from the Procter and Gamble Company for her proposal entitled “High Pressure Plasma Processes.”

Sundaram Narayanan, Ph.D., BIE, has received funding in the amount of $15,000 from Intel for his proposal entitled “Integrating Mobile Devices with High Fidelity Computer Models for Future E-Business Applications.”

Raghavan Srinivasan, Ph.D., ME, has received funding in the amount of $200,000 from the U.S. Department of Energy for his proposal entitled “Continuous Severe Plastic Deformation Processing of Aluminium Alloys.” Dr. Srinivasan has also received $20,000 from the Edison Materials Technology Center for a proposal entitled “Paper Abrasivity Testing - Phase II.”

J. Mitch Wolff, Ph.D., ME, has coauthored the following papers:

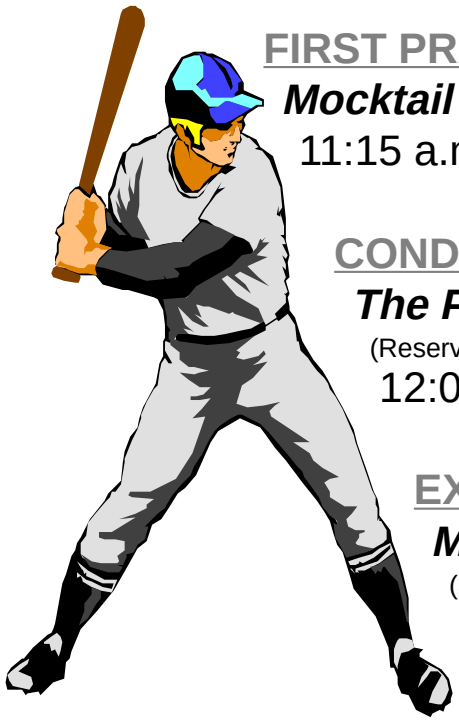
a paper with P. Koch (BSME ‘97, MSME ‘99), D. Probasco (MSME ‘97), B. Copenhaver (AFRL), and R. Chriss (NASA Glenn), entitled “Transonic Compressor Influences on Up stream Surface Pressures with Axial Spacing” in the *AIAA Journal of Propulsion and Power,* Vol. 17, No. 2, 2001, pp. 474-476.

a paper with T. Leger (BSME ‘98, MSME ‘00) and D. Johnston (Research Assistant Professor at WSU) entitled “Design of a High Spatial Resolution MEMS Pressure Sensor Array. Dr. Wolff presented this paper in the proceedings of the Sixth National Turbine Engine High Cycle Fatigue (HCF) Conference in Jacksonville, Florida, March 6 - 8, 2001.

SPRING TRAINING 2001

Student Union Multipurpose Room
Tuesday, May 8th

step up to the plate
and swing with confidence
when you compete for jobs!



PRE-SEASON WARM-UPS

Mixin' & Minglin' with Ray Angle

10:00 a.m. – 11:15 a.m. in 156 Student Union

FIRST PRACTICE

Mocktail Hour with WSU Alumni

11:15 a.m. – 12:00 p.m. in the Skylight Lobby

CONDITIONING AND TRAINING

The Power Meal with DTN Productions

(Reservations Require $10 Pre-Payment)

12:00 p.m. – 1:30 p.m. in the Multipurpose Room

EXHIBITION GAME

Mock Interviews with Corporate Recruiters

(Sign-up for a Mock Interview in E334 SU)

2:00 p.m. - 4:30 p.m. in the Multipurpose Room

CAREER *Services*

Preparing Wright State Students for their Job Search

E334 Student Union, Wright State University

(937) 775-2556 Web: http://career.wright.edu

NEW COURSE OFFERED

for Summer Quarter
in Computer Engineering

CEG 890 (1 Quarter Hour)
Selected topics in Speech Analysis and Application
Time: TBA
Instructor: Dr. Anna Esposito, 336 Russ, 775-5108, anna@cs.wright.edu

The course is intended to provide an overview of topics in speech analysis and applications. It will cover topics such as speech production, phonetic, acoustic analysis, speech encoding, and some speech disorders. The students are required to take a sample quiz during each class that will test for basic material in the reading assignment. A reading list of papers will be provided in advance of these tests. The course consists of ten lectures approximately one hour in length. The course is for advanced MS and Ph.D. students in Computer Science, Computer Engineering, and Electrical Engineering. Introductory knowledge of linear algebra, calculus, basic physics, Fourier analysis, Laplace transforms, and algorithms is needed for background.

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

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