

SPECTRUM

Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

TODAY'S EDITION

See page 5 for information on Choices and Challenges Forum.

VOLUME 21 NUMBER 20 THURSDAY, FEBRUARY 11, 1999

DuPont's \$23-million gift largest in university's history

By Liz Crumbley

A \$23 million gift-in-kind announced by DuPont is the largest single donation ever received by Virginia Tech and will aid the university's researchers in developing recyclable automotive parts, low-cost aircraft parts, and composite bridge beams.

The gift, consisting of several thermoplastic-composites technology patents and related materials and equipment, will be used by the university for commercial licensing as well as research applications. Virginia Tech competed with several other research universities for the gift, which is one of the most valuable of its kind ever made by an industry to a single institution.

Michael Martin, executive vice-

president of Virginia Tech Intellectual Properties (VTIP), Inc., said the \$23-million evaluation is based on DuPont's projection of using the patented technology in a variety of markets, including automotive and electrical cabinetry.

"Virginia Tech's material scientists and intellectual property developers believe it has even broader applications," said Martin, who is chairman of the Composites Manufacturing Association within the Society of Manufacturing Engineers. "The technology being donated by DuPont also has the potential for use in bridge decks and other infrastructure applications, and in aircraft construction."

Production assets from the patents will be used to help establish the Random Wetlay and Continuous Rollforming Composites Labora-

tory, under the direction of Donald G. Baird, professor and eminent scholar of chemical engineering, and Alfred C. Loos, professor of engineering science and mechanics and materials science and engineering. The new lab will be affiliated with the Center for Composite Materials and Structures, co-directed by Baird and Loos, and with the Center for High Performance Adhesives and Composites, directed by James E. McGrath, university distinguished professor of chemistry.

Baird explained that the random wetlay process patented by DuPont is used to make thermoplastic-composite porous mats, consisting of a random mixture of polymer and reinforcing fibers. In DuPont's process, which is based on paper-making technology, glass or

other reinforcing fibers and thermoplastic fibers are chopped up and dispersed in a random mixture in water. This creates a slurry that is cast onto a moving screen and then dried, leaving a mat of thermoplastic and reinforcing fibers that can be formed into composite sheets and molded into items such as car parts.

VTIP will market and license these patented technologies to businesses and industries that wish to use them to improve their products and processes, Martin said.

Meanwhile, Virginia Tech researchers will use the patented processes and materials as a basis for developing advanced random wetlay technology. Along with the patents, (See *DUPONT'S* on 8)

Affirmative Admissions Statement Issued

By Larry Hincker

A conservative Washington DC think-tank, The Center for Equal Opportunity, released a report January 27 that was critical of admissions policies at several Virginia universities. The report alleged that some Virginia universities discriminate against white applicants in favor of blacks or other minority members.

At three of the most selective state universities, average SAT scores of 150 points or more separate the average SAT for black applicants versus the average SAT for white applicants. The report based its conclusion solely on SAT scores.

Virginia Tech was among the 10 schools studied, but was not singled out for criticism. The report claimed that 595 white applicants were denied admission to Tech in favor of black applicants with lower SAT scores. However, when the average GPA is factored in, only 19 supposedly more qualified white applicants were denied admission.

Seen through the eyes of admissions counselors reviewing more than 16,000 applications each year, 19 rejections is almost equivalent to zero. According to Karen Torgersen, director of Admissions, "The report claims that we denied admission to 19 more-qualified candidates. I would think that random chance would yield a higher number. Moreover, the report misunderstands the admission process. We would never base admissions decisions on only one factor."

Torgersen said admissions decisions are both art and science. Each application is reviewed at least once by an admissions counselor mulling many criteria to determine if the applicant will be successful at Virginia Tech. Criteria include high-school grade-point average, class rank, standard-

(See *AFFIRMATIVE* on 3)

Undergraduates to create Tech's first satellites

By Liz Crumbley

In 2001 NASA's Space Shuttle will launch the first satellites created at Virginia Tech—and undergraduate engineering students will be the designers, builders and operators.

During fall semester 1998, a team of nine aerospace and ocean-engineering (AOE) students drafted conceptual designs for the Virginia Tech Ionospheric Scintillation Measurement Mission (VTISMM) as their senior design project. Their adviser Christopher Hall, assistant professor of AOE, and electrical-and-computer-engineering (ECpE) faculty members Wayne Scales and Warren Stutzman submitted the design to the University NanoSatellite Program, a competitive grant program sponsored by the U.S. Air Force and the Defense Advanced Research Projects Agency (DARPA).

The Virginia Tech project was one of ten (See *UNDERGRADUATES* on 7)



Discussing their project in front of a model of the Space Shuttle, which will carry the satellites they're redesigning are (left to right) Chris Hall, assistant professor of aerospace engineering and students Mike Powers, Kristin Makovec, James Schwartz, Ivan Acosta, C.J. Waldron, and Pritha Santiago (Bletri)

Classified Raises Recommended

By Ralph Byers,

director of government relations

The 1999 General Assembly reached the halfway point Sunday with reports of the House Appropriations and Senate Finance Committees. Major items addressed by the committees include a 6.25-percent raise for state classified employees and a similar increase for public-school teachers. Both committees also set aside funds to begin phasing out the sales tax on food. In the end, only a small amount was left to address budget-amendment requests of the colleges and universities.

For example, the House Appropriations

GENERAL ASSEMBLY UPDATE

Committee recommended a total of \$27.2 million for higher education above the amount contained in Governor James Gilmore's budget. The committee recommendation includes \$6 million in student financial assistance, \$3.5 million for financial aid for private college students, and \$3.2 million to continue to phase in the roll-back of tuition for in-state undergraduates. This left about \$14.5 million in operating support to spread across the 15 senior colleges and universities, the community college system's 23 colleges, and Richard Bland College.

Budget writers in the House and Senate (See *CLASSIFIED* on 8)

Tech begins deployment of LMDS network

By Heather McElrath

Virginia Tech has announced it will begin limited deployment of high-bandwidth wireless technology, or LMDS, in the Blacksburg area in early May. This deployment, made possible through an agreement with Wavtrace, a Washington-based company supplying the technology, represents the nation's first university/private sector partnership for the deployment of a point-to-multi-point LMDS network. LMDS (local multi-point distribution service) is a wireless-communications service capable of delivering two-way, high-speed, data, voice

(See *TECH* on 2)

NEWSMAKERS

Virginia Tech faculty and staff members and students are often the subject of significant national and state-wide news coverage. To better inform the university community about these accomplishments, the Office of University Relations has compiled this monthly report. This report excludes coverage in the Roanoke news-media market. For more information about the articles mentioned, call Julie Kane, university public relations coordinator, at 1-9934, or contact your college public relations office.

(Charlottesville) *Daily Progress* (Sept. 21): **Ray Plaut**, professor of civil engineering, was quoted in an article about inflatable dams. Plaut is one of the world's leading experts in the design of inflatable dams for flood control and other uses.

RF Design (October 1998): The national magazine for radio-frequency industries featured "A moment with **Theodore S. Rappaport**," outlining the career of the founding director of Tech's Mobile & Portable Radio Research Group (MPRG). Rappaport's views on smart-antenna technology was the subject of the cover article of the October 12 issue of *Mobile Phone News*. Rappaport and his MPRG colleagues are developing antenna systems that will reduce interference in wireless-communications transmissions.

ABC Radio (November 13): Professor of History **William Ochsenswald** discussed Saddam Hussein's latest attempts to prevent UN weapons inspectors from looking for chemical and biological weapons.

Richmond Times-Dispatch (November 18): This issue included an article about the State Council of Higher Education's approval of Virginia Tech's plan to establish the state's first graduate degree program in computer engineering. The new program was developed by the **Department of Electrical and Computer Engineering**.

"**With Good Reason**" **Virginia Public Radio** (week of December 7): Professor of Geography **Bonham Richardson** looked at the history of the Caribbean. "With Good Reason" is a half-hour public-affairs program carried on a dozen Virginia public-radio stations.

"**With Good Reason**" **Virginia Public Radio** (week of December 21): Professor of English **Lucinda Roy** discussed the art of writing. (Repeat of an earlier program)

The following describes coverage achieved by **Robert Denton**, director of the Center for Leader Development:

(Montreal) **Canadian Broadcasting Corporation**: live interview on the Nancy Wood show on Clinton's video testimony.

(Savanna, Georgia) **WBMQ-AM** (September 24): Don Scott Show, live interview on Clinton scandal.

WBMQ-AM (October 1): Don Scott Show, live interview and listener call-in discussion on Clinton scandal.

Lynchburg News and Advance (October 29): interview comments on 6th district congressional race.

The **Christian Science Monitor** (November 18): Starr finally enters the chamber," by Peter Grier, interview comments on potential impact of Starr's impeachment testimony.

Wisconsin Public Radio (December 14): "Idea Net with Tom Clark," hour-long listener call-in show on the impeachment hearings and process.

Ag Day (January 14): The nationally syndicated television program featured a segment on Virginia Tech's fleet of natural gas-powered vehicles.

Access magazine (January 27): The cover story is about Virginia Tech and NCSA Scientists research to evaluate usefulness of virtual reality (CAVE) applications. Principal investigator is **Deborah Hix** of computer science. The story is at: <http://access.ncsa.uiuc.edu/CoverStories/VRApps/>

Nature Conservancy (January/February 1999): Professor of Fisheries and Wildlife Sciences, **Richard J. Neves**' project on mussel research in the Clinch River in Virginia was mentioned regarding the last August tanker-truck spill of industrial chemicals in the river which caused the world's last two populations of tan riffleshell mussels to become extinct.

Student Action in Engineering (Vol. 2, Issue 4): The newsletter of the Society of Automotive Engineers included articles about the **Virginia Tech Hybrid Electric Vehicle Team** tying for first place in the 1998 FutureCar Challenge in Detroit. The article also mentioned that the team's advisor, Associate Professor of Mechanical Engineering **Doug Nelson**, received the FutureCar Challenge Faculty Advisor of the Year Award from the National Science Foundation.

ACHIEVERS

Barbara Davis, assistant professor in human nutrition, foods and exercise has won a \$30,000 two-year Future Leaders Award from the International Life Sciences Institute (ILSI). Her project was titled "Modulation Of Estrogen Activity By Vitamin B6 In Breast Cancer Cells."

Funds were awarded for her proposal entitled "Modulation of estrogen activity by vitamin B6 in breast-cancer cells." The rationale for this project is that the growth of certain types of breast-cancer cells is stimulated by estrogen. Current treatment for this type of breast cancer involves hormonal therapy with drugs such as tamoxifen. Because cells often become resistant to these drugs, identification of new treatment options is critical. Previous studies have shown that Vitamin B6 alters the sensitivity of some tissues to estrogen. This study will examine whether Vitamin B6 treatment will interfere with the ability of estrogen-sensitive breast cancer cells to grow in the lab. If B6 does interfere with the growth of these cells, follow-up studies will be conducted to determine the efficacy of this vitamin in the treatment and prevention of certain forms of breast cancer in women.

Betty Heath-Camp was elected national advisor for Omicron Tau Theta, a professional honorary society for recognizing leaders in vocational and technical education. She

continues to serve as the editor for the journal of the society, the *Journal of Vocational and Technical Education*.

At the recent American Vocational Association (AVA) convention in New Orleans:

Margaret Lichty, doctoral candidate in Vocational and Technical Education, was awarded a \$3,000 graduate fellowship by the Family and Consumer Sciences Division.

Daisy Stewart, associate professor in vocational and technical education (VTE) received the Outstanding Contribution Award from the AVA Family and Consumer Sciences Division and the Educator of the Year Award from the Family and Consumer Sciences Education Association.

Stewart, Lichty, and **Pat Werth**, doctoral candidate in VTE, gave a presentation on "Family and Consumer Sciences for the New Millennium."

Bernice Wilson, 1998 doctoral graduate in VTE and currently Alabama extension resource management specialist, and **Stewart** presented a poster session titled "Welfare Reform From the Employers' Perspective." Stewart was a member of a panel on the topic "Relationships Among AVA, NAITTE, and Other Affiliates," and chaired the meeting of the Editorial Board of the *Journal of Vocational and Technical Education*. Stewart served as coordinator and **Paula Wood**, doctoral candidate, served as

facilitator for a series of sessions developed specifically for student members.

Mahmood A Khan, a professor in Hospitality and Tourism Management, has been appointed as a trustee of the Hospitality Sales and Marketing Association International (HSMIAI) for a three-year term.

E. George Stern, Earle B. Norris professor emeritus of wood construction, and his father, the late Bruno Stern, were the subject of a four-page article, "The Letter," in the November/December issue of *The Penn Stater*, the alumni magazine of Pennsylvania State University. The article focused on a letter Penn State's former President Hetzel wrote that helped the release of Stern's father from a concentration camp during World War II.

Robert Bush, an associate professor in Wood Science and Forest Products, participated in a Foreign Agricultural Service to the Republic of South Africa sponsored by the USDA.

The purposed of the project was to provide South Africa's wood industries with information needed to increase their use of U.S. species.

TECH

Continued from 1

and video traffic. Virginia Tech won four LMDS licenses in last year's government auctions.

The transmission equipment used at the Blacksburg site is Wavtrace's PTM 1000 system, the first wireless broadband delivery system based on time-division duplexing (TDD) technology. TDD allows for transmit and receive functions to occur on one channel, a process more efficient than what is possible with the traditional airlink technology, which requires two channels, one to transmit and one to receive.

Virginia Tech officials saw the LMDS auction as an important research and economic-development opportunity. "We predicted that only high-population urban markets would be of interest to the companies that participated in the auction," said Judy Lilly, director of Communications Network Services. This proved to be true as over 100 rural market areas across the U.S. attracted no commercial bidders. "Consequently, we felt important research and economic development issues would go unexplored unless we became involved."

"Virginia Tech chose to take an active leadership role to

help ensure LMDS technology will be available and cost-effective to the region's citizens and businesses," Lilly said, "especially for those in rural areas with lower population densities where cost-effectiveness is critical." Wavtrace's system, which allows for efficient use of spectrum using TDD technology, provides Virginia Tech a highly cost-effective way to explore such service. "Virginia Tech's local research tested in Blacksburg will be used as a model for replicable deployments throughout the rest of the license area."

"We are very pleased to be working with Virginia Tech, a well-respected leader in the development of new wireless technologies," said Thomas T. van Overbeek, CEO of Wavtrace. "We expect this project will demonstrate that a wireless solution for delivery of broadband services has wide application and that service delivery can be economically viable in urban or rural environments."

Virginia Tech is taking an interdisciplinary approach to the project by using the expertise of faculty and staff members from Virginia Tech's Information Systems, Communications Network Services, and the Center for Wireless Telecommunications divisions. The project involves university geographers, econo-

mists, business and marketing faculty members, electrical engineers and computer scientists.

With this early roll-out, Virginia Tech continues to expand its already extensive communications and advanced Internet research-and-development capabilities such as the Blacksburg Electronic Village, the Smart Road, and Net.Work.Virginia (a state-wide ATM network and nationally recognized prototype for the next-generation Internet).

LMDS is a two-way digital wireless-communications medium that can carry voice, data and video traffic. The capacity of the A-Block section of spectrum auctioned by the FCC in last year's auction is more than twice the total bandwidth of AM/FM radio, VHU/UHF television and cellular telephone combined. LMDS frequencies are relatively high in the radio spectrum, ranging from 28-31 GHz.

In early 1998, Virginia Tech became the first university in the nation to participate in a Federal Communications Commission (FCC) spectrum auction and was awarded four LMDS licenses covering 16,507 square miles of Virginia, and portions of North Carolina and Tennessee. The region has an estimated population of 1.6 million.

Choices and Challenges forum looks at genetic engineering

By Kirsten Worley

Can humans redesign themselves? What are the qualities that define us as humans, and is it desirable—or acceptable—to change them? Are there limits to what should be attempted? How do we decide?

The Choices and Challenges Project will present a public forum on Reinventing the Human Thursday, March 25, from 8 a.m.-4 p.m. at the Donaldson Brown Hotel and Conference Center. The program will offer social, political, economic, and ethical perspectives to help the community make decisions now that will affect life in the future. All programs are open to public at no charge. Registration is recommended (although not required.)

The recent media focus on cloning animals has alerted the general public to the rapid pace of work now taking place in human genetic and reproductive technologies. New genetic-engineering procedures now permit human genes to be identified and transferred. Researchers are developing these procedures to cure disorders and correct serious childhood health problems. But the techniques could also be used, before birth or during infancy, to endow otherwise healthy children with traits they would not otherwise possess or to enhance the ones they do have. The possibilities go beyond changing physical appearance such as height and build

and might include intelligence, athletic skills, personality, and behavior.

How do these recent advances in genetic engineering impact our ethical and social decisions concerning the “re-inventing” of children? Is it ethical to create the “perfect” baby through genetic technology, and who decides what “perfect” means?

The forum is divided into three parts: morning discussion sessions providing background information; a main panel session featuring eminent presenters from the fields of political science, medical ethics, philosophy, history, and child development; and afternoon sessions offering further discussion on issues of public policy. Sessions include such topics as “Cloning and Public Policy,” “Genetic Explorations in Science Fiction,” “Feminist Debates and Dilemmas,” “Religious Perspectives,” and “Patterns of Child Development.”

The main session, to be held from 11 a.m.-12:30 p.m., will include panelists Robert F.

Murray Jr., author of Genetic Variation and Disorders in Peoples of African Origin; Diane B. Paul, author of Controlling Human Heredity and The Politics of Heredity; Gail S. Ross, chief psychologist for several children’s programs at New York Hospital; Anita Silvers, author of Disability, Difference, Discrimination; and LeRoy B. Walters, author of The Ethics of Human Gene Therapy.

The PBS Adult Learning Satellite Service will broadcast an edited version of the main panel session nationally. An on-line web-based discussion group will provide the opportunity for the community to debate the issues and submit questions in advance of the forum. The group can be found at URL <http://www.cis.vt.edu/choices&challenges>.

The Choices and Challenges project is a public-outreach program that explores the social and ethical dimensions of science and technology. Topics covered range from genetic engi-

neering to computer network technologies to the use of environmental resources. The project offers unique programming that encourages dialogue among professional and lay members of the university and regional communities. Video tapes, audio tapes, and transcripts of many previous forums are available.

Program brochures, which include a pre-registration form, can be obtained by calling the Donaldson Brown Center at 1-5182 or by contacting the Choices and Challenges project office at 254 Lane Hall, Virginia Tech, Blacksburg, VA 24061-0227; calling 1-6476; or sending e-mail to choices@vt.edu. Interested persons also may visit the web site at <http://www.cis.vt.edu/choices&challenges>.

This Choices and Challenges forum is an outreach service of Virginia Tech. Additional support has been provided by the Virginia Foundation for the Humanities and Public Policy.

Book examines building blocks of life

By Jeffrey S. Douglas

Words like cloning, DNA and genetic engineering have become a part of the modern popular lexicon.

Yet for many, they remain puzzling and abstract concepts related to mysterious processes that occur at the molecular levels of life.

Now, two professors in the Virginia-Maryland Regional College of Veterinary Medicine have authored a text which offers a fairly simple, straight-forward explanation of the terms and processes that are part of the biotech-

nology revolution.

DNA, Genes, and Genetic Engineering, by Gordon R. Carter and Stephen M. Boyle, is a 146-page text liberally illustrated with photographs and diagrams that was conceived to demystify the world within.

Carter, a veterinary microbiologist who serves as a professor emeritus in the college, and Boyle a molecular bacteriologist working in the Center for Molecular Medicine and Infectious Diseases, decided to write the book as an easy to use primer for students and others interested in understanding more about a technology that is

changing the world.

Vast amounts of technical information have been condensed into core essentials which are presented in a simple and understandable summary form. The book has been written so that readers with only a basic understanding of chemistry and biology should be comfortable with material presented, according to Boyle and Carter.

The book contains a useful glossary as well as a timeline of scientific milestones in genetics and related areas.

CORRECTION/CLARIFICATION

The Corps of Cadets Center for Leader Development (CLD) was initiated by corps alumni and the commandant and his staff, not the College of Arts and Sciences, as erroneously reported in a story published January 28.

In clarifying the CLD’s origins, Henry Dekker, chairman of the Virginia Tech Corps of Cadets Alumni, Inc. (a university-related corporation), said the CLD was supported by a \$2-million gift from a corps alumnus who wished to remain anonymous. Colonel Ed Schwabe, head of Army ROTC, led the effort to seek approval for the proposed center from the university’s Commission on Academic Affairs and the provost. Following approval, the CLD was housed in the College of Arts and Sciences, which already housed ROTC. Arts and Sciences Dean Robert Bates, Dekker said, “provided considerable academic support and guidance.”



VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Spectrum, a faculty-staff tabloid, is published each Thursday during the academic year, with the exception of certain holidays, exam weeks, and the summer. Copy deadline is 5 p.m. Thursday. No advertising is accepted.

Spectrum is a non-profit publication of the Office of University Relations: Lawrence G. Hincker, associate vice president for University Relations; David Nutter, associate director for Public Affairs.

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Business, engineering graduates most popular

By Sookhan Ho

Business and engineering majors were the most popular students among employers recruiting at Virginia Tech last fall semester. Career Services Director Jim Malone said the top 10 programs (in numbers of interviews) are all business and engineering majors, except for computer-science applications (a graduate program in Arts and Sciences). The 10 are: management science and information technology (decision sciences option)—1,431 interviews conducted, 161 students participating; electrical engineering—1,090 interviews, 120 students; mechanical engineering—1,077 interviews, 126 students; finance—787 interviews, 117 students; computer engineering—744 interviews, 72 students; industrial and systems engineering—701 interviews, 94 students; computer-science applications—669 interviews, 41 students; chemical engineering—581 interviews, 56 students; marketing—556 interviews, 96 students; accounting—487 interviews, 70 students.

Programs that also drew considerable numbers of interviews were computer science, accounting information systems, management, and civil engineering.

The number-one ranking of the decision-science option in the management science and information technology major can be attributed in part to the continued high demand for information-technology graduates, Malone said. It may also reflect the tendency of management-science majors, like most other business seniors, to seek jobs rather than go directly on to graduate school—a decision that may be influenced by the current job-market

boom as well as by the job-experience admission requirement at many MBA programs.

The list accounts only for the 1,984 students participating in Career Services’ fall on-campus interviewing program. Malone said not all seniors participate—some may have jobs or job offers in hand as a result of Co-Op, internship, or other programs; others may be using career services offered by their academic departments.

While business and engineering majors are the traditional draw for recruiters at Virginia Tech, Malone said such majors as math and agricultural and applied economics also fared relatively well in interview numbers.

The National Association of Colleges and Employers expects job prospects for this year’s college graduates to remain “bright” even if the projected increase in job opportunities is “less spectacular” than last year’s projected increase.

A survey it conducted showed that employers are forecasting a 10-percent increase in the

number of job opportunities for the class of ’99. Last year, employers projected a 19-percent increase.

But the survey found that about 55 percent of employers plan to hire even more new graduates by the end of the ’98-’99 academic year than they did last year. More than one-third plan to maintain the hiring levels they achieved last year. Only 8 percent said they will cut back.

At Virginia Tech, 497 organizations recruited on campus last fall semester, up 22 percent from a year ago, Malone said. They conducted 11,576 interviews, up 12 percent from a year ago.

Employers will be recruiting in Squires for a few weeks this spring, which “promises to be lighter in activity,” Malone said. Fall semester has become the primary recruiting season for employers, he said—“we already have several dates filled for next fall.”

AFFIRMATIVE

Continued from 1

ized test scores, and the rigor of the high-school curriculum. The most important factor in an admissions decision is high-school GPA relative to the academic courses attempted.

In evaluating borderline cases or simply to understand the applicant’s overall circumstances, counselors will also look at other factors. “We will look at such things as whether the student took advantage or advanced courses, whether the student will be a first-generation college student, or whether grades were declining rather than rising in the late stages of high-

school life,” Torgersen said.

The Admissions Office will also slightly “discount” a poor SAT score when accompanied by strong high-school GPA. But a strong SAT score will never compensate for a poor GPA.

Torgersen said admission is competitive on a relative basis. Applicants are compared to the entire applicant pool, other applicants from their high school, and other applicants in their choice of major.

ACTIVITIES

EVENTS

Thursday, 11

YMCA Slide Show, noon, Cranwell Center: "Adventures with the Virginia Tech Women's Whitewater Club," by Liz Ritchie and Beth Thomas.

Black History Month Program, 7 p.m., Squires Colonial Hall: "Who Needs Affirmative Action," by Tim Wise.

Friday, 12

International Club Coffee Hour, 5 p.m., Cranwell Center: "Endangered Species Conservation: Madagascar Fish Eagle," by James Fraser.

Women's Basketball, 7 p.m.: At Massachusetts.
Student Recital, 8 p.m., Squires Recital Salon: Noriko Okabe.

Saturday, 13

Men's Basketball, 2 p.m.: At Fordham.
Black History Month Program: 7 p.m., Black Cultural Center, Squires: Discussion and reading of selected writings of April Turner.

Student Recital, 8 p.m., Squires Recital Salon: Jeff Crouse.

Sunday, 14

YMCA Hike, 1:30 p.m., meet in parking lot 403 Washington. St.: Cascades.

Women's Basketball, noon: At Rhode Island.
Student Recital, 3 p.m., Squires Recital Salon: Marcy Pell and Craig Zamer.

Student Recital, 8 p.m., Squires Recital Salon: Riley Pugh.

Monday, 15

Presidents' Day Holiday for Staff.
Multicultural Display Opening, 11 a.m., Squires Multicultural Center: "Highlighting Jewish Heritage."
Faculty Development Workshop, 3-5 p.m., NMC, Newman Library: "Introduction to Streaming Audio and Video."

University Council, 3-5 p.m., 1045 Pamplin.
Black History Month Program: 7 p.m., Black Cultural Center, Squires: "Christiansburg Institute, an Educational Legacy."

VTU Program, 7:30 p.m., Burruss auditorium: *Me and My Girl*.

Tuesday, 16

Salary and Wage Paydate.
Bloodmobile, 10 a.m.-4 p.m., Squires.
Faculty Development Workshop, 10 a.m.-noon, NMC, Newman Library: "Adobe PageMaker, Part 2."
Art Exhibit Opening, noon, Armory Gallery: "Artworks," by Greg Bryson.
Black History Month Program: 7 p.m., Lyric Theatre: "Improvisations: A Vision of the Community."
Faculty Senate Meeting, 7 p.m. 32 Pamplin.
Men's Basketball, 7 p.m., Cassell Coliseum: Temple.
Special Music Concert, 7 p.m., Squires Recital Salon: Audubon Quartet/Black History/Poetry/Dance.

Wednesday, 17

Bloodmobile, 10 a.m.-4 p.m., Squires.
YMCA Mornings, 9:30-11:30 a.m., Luther Memorial Church: "Face and Skin Care."
Family Support Program, noon-1 p.m., DBHCC Conference Room A: "Teenage Tangle: Grooming the Parent Child Relationship."
Organization of Women Faculty Lunch, noon, DBHCC Dining Room.
Multicultural Program, 1-3:30 p.m., Squires Multicultural Center: Monthly Book Club.
Faculty Development Workshop, 3-5 p.m., NMC, Newman Library: "Creating a Web-Based Course Using CourseInfo."
"With Good Reason", 7 p.m., WVTF: "Shakespeares in Love," featuring Lucinda Roy and Nikki Giovanni.

Thursday, 18

Bloodmobile, 10 a.m.-4 p.m., Squires.
YMCA Slide Show, noon, Cranwell Center: "A Two-Week Bike Trip to Southern China," by Dave Jenkins.
Staff Senate Meeting, 5:30 p.m., 1810 Litton Reaves.
Black History Month Program: 7 p.m., Black Cultural Center, Squires: Discussion/Forum.
Women's Basketball, 7 p.m.: At La Salle.

SEMINARS

Thursday, 11

Statistics, 3:45 p.m., 409 Hutcheson: Jin-Ting Zhang.

Entomology, 4 p.m., 220 Price: "Western Corn Rootworm Biology and Pest Management in Virginia," by Roger Youngman.

Geological Sciences, 4 p.m., 2044 Derring: "Tidal Rhythmites: What Are They, and What Do They Tell Us?" by Ken Eriksson.

Friday, 12

MCBB, noon, 102 Fralin: "Role of ICE family of Caspases in IL-1 Activation and in Apoptosis," by Douglas Miller, Merck Labs.

Communication Studies, 3:30-4:30 p.m., Hillcrest Honors conference room: "Aggressive Women and Teary-Eyed Men?: Gender and Emotions in Work Teams," by Marjukka Ollilainen.

Monday, 15

CSES, 4 p.m., 232 Smyth: "Wheat Chromosome Engineering and Breeding," by Jianli Chen.

Horticulture, 4 p.m., 409 Saunders: "Program Development and Evaluation," by Lex Bruce.

Tuesday, 16

Computer Science, 4 p.m., 105 Williams: "CSCR—Computer-Supported Collaborative Reflection," by Mark Guzdial, Georgia Tech.

Wednesday, 17

Science and Technology Studies Center, 4-5:30 p.m., 132 Lane: "The Triumph of the Pedigree: Sir Francis Galton and the Birth of Eugenics," by Nicholas Gillham, Duke.

Thursday, 18

Statistics, 3:45 p.m., 409 Hutcheson: "From Designed Experiments to Spatial Random Fields. A Composite Likelihood Approach," by Oliver Schabenberger.

Entomology, 4 p.m., 220 Price: TBA, by Jeff Walters.

Geological Sciences, 4 p.m., 2044 Derring: "A Cooks Tour of Carbonates Form the Poles to the Tropics, Australia and New Zealand," by Fred Reed.

Lecture and exhibit focuses on Japan

Tau Sigma Delta, the Honor Society in Architecture and Allied Arts in the College of Architecture and Urban Studies, is sponsoring a lecture by Rosemary T. Smith today at 1 p.m. in Hancock auditorium.

Smith, assistant professor of art history at Virginia Commonwealth University, will speak on "The Aesthetics of Japanese Architecture: Sources and Effects." The lecture will introduce the basic aesthetic principles of Japanese architecture, including the role of religion and a discussion of how they are manifested in major Japanese building types such as shrines, temples, tea houses, and domestic structures. A reception will follow at 4 p.m. in the Armory Gallery, where the special exhibition of art in Japan, "Souls on Garbage," is on display. Both the lecture and reception are open to the public. The event is co-sponsored by the Henry H. Wiss Center for Theory and History of Art and Architecture, College of Architecture and Urban Studies, and the Art and Art History departments. For more information, call Joseph Wang or Humberto Rodriguez-Camilloni at 1-5324.

BULLETINS

Museum continues Saturday Science

The Virginia Tech Museum of Natural History will continue its "Saturday Science" for children and their parents on Saturday, Feb. 27, from 11 a.m.-noon at the museum, 428 N. Main St. Activity is centered around the theme, "Winter—A Unique Season." Saturday Science is free; however, pre-registration is required. Call 1-3001 to pre-register.

OWF lunch announced

On Wednesday, Feb. 17, the Organization of Women Faculty will hold a lunch from noon-1 p.m. in the Donaldson Brown Conference Center Dining Room. For information, call 1-8163 or callihan@vt.edu.

PBD induction details set

The Gamma Omega Chapter of Phi Beta Delta (PBD), the Honor Society for International Scholars, will be holding its third annual induction ceremony on Tuesday, Feb. 23. PBD recognizes faculty members and students with past and continuing activities and achievements in the international arena. The ceremony for new members

will be held in the Squires Brush Mountain Room at 6:30 p.m., followed by a reception at 7:15 p.m. There will be a presentation by Philip Huang, professor of management science and information technology in the Pamplin College of Business, titled "A Personal View of U.S.--China Relations". The presentation begins at 8 p.m. and is open to the public.

Christiansburg Institute subject of TV Show

The Christiansburg Institute (CI) is the topic of *Blue Ridge Nightline* on Blue Ridge Public Television Sunday, Feb. 14, at 3:30 p.m.

Christiansburg Institute was open from 1866 to 1966 and was the first high school for black students in Southwest Virginia. The program will discuss the history of Christiansburg Institute, plans and current efforts on behalf of Virginia Tech students to enlist community input and support for the restoration of the campus.

Guests on the program include Elaine Carter, Lewis Perry, and Rachel Parker-Gwin. Service-Learning students in Parker-Gwin's classes have been leading community focus groups for the Christiansburg Institute Community Learning Center.

Blue Ridge Nightline is a half-hour public-affairs program.

Christiansburg Institute also will be the subject of a Black History Month program at Virginia Tech. "Christiansburg Institute: An Educational Legacy," will be held February 15 at 7 p.m. in the Black Cultural Center. The program will feature recollections from CI alumni regarding their experiences at the school.

Lexington author will read and sign books

Lexington author R.T. Smith will read and sign books at Volume Two bookstore Thursday, Feb. 25, at 7 p.m.

Smith is the author of six books, and is currently editor of *Shenandoah*. His visit is part of the English Department's Visiting Writers Series. For more information, call Kari Lee at 1-9001.

Cajun dinner planned for February 22

Reservations are recommended for a Cajun buffet to be held in the Donaldson Brown Conference Center on Monday, Feb. 22, from 11:30 a.m.-1:30 p.m.

The cost is \$7.95 per person. Call 1-5632 or e-mail lisae@vt.edu to make reservations.

Research Symposium announced

The Graduate Student Assembly invites all graduate and undergraduate students to participate in the Fifteenth Annual Research Symposium of Virginia Tech.

"The Research Symposium is a forum that provides graduate and advanced undergraduate students an opportunity to showcase their achievements in research," said Peter Sforza, event chair.

Students may participate by submitting an abstract describing their research and presenting a poster display.

A team of judges representing the eight colleges will evaluate the posters. Cash prizes will be awarded to the top two presenters in each of the five categories described below. In addition, the top presenter in each category will be awarded premier seats to "Challenges

of a Changing World," a lecture given by General Colin Powell on Tuesday, March 30, at 7:30 p.m. in Cassell Coliseum. The Graduate Student Assembly is a contributing sponsor of General Powell's presentation.

Posters are to be submitted in one of the following categories: Life Sciences, Physical Sciences and Engineering, Social Sciences and Humanities, Undergraduate, and Virtual. All students participating in the Virtual category will prepare a web site instead of a poster presentation.

The symposium will be Monday, March 29, in Squires Old Dominion Ballroom in.

Registration begins Monday, Feb. 15. The deadline for registration is 5 p.m. March 19. Registration is available exclusively through an on-line form, which can be accessed at <http://gsa.uusa.vt.edu>.

Faculty members and GTA's are requested to make copies of the packet to distribute to the graduate and undergraduate students in their departments.

For more information on the 15th Annual Research Symposium of Virginia Tech, contact Sforza at psforza@vt.edu or 1-1867.

Staff Association plans workshop

The Virginia Cooperative Extension Staff Association will hold its eighth annual Building Stronger Working Relationships Professional Development Workshop on Wednesday, Feb. 24. The title for this year's conference is "Changing Roles of the Office Professional." The workshop will be held in the Jamerson Athletic Center.

Speakers will focus on changes in the workplace and how those changes can be used for a professional advantage. Topics are: Ethics in the Workplace, Time Management, Adapting to the University of the World-Wide Web, and Support Leadership-Lead From Where You Are.

For more information, contact Meredith Joyce at 1-6879.

Baird Award nominations sought

The Department of Residential and Dining Programs (RDP) is seeking nominations for the 1998-1999 A. Alan Baird Award. The award honors the student who has

contributed the most to the residence hall program during or culminating in the current academic year. All students are eligible for the award, including those not affiliated with RDP. Additionally, students' past contributions will be taken into account.

The Baird Award is made possible through the generosity of the family and friends of Alan Baird, Class of 1988, who died in March 1992. Baird was the president of the Residence Hall Federation (RHF) during 1987-1988 when he was also president of the Virginia Association of College and University Residence Halls. Nomination forms are available in 109 East Eggleston Hall, the Hokie Passport office (41 Owens Hall), and at the Area Offices (Payne, West Ambler Johnson, Newman, Shanks, Lee, and New Residence Hall West). The deadline to submit nominations is Friday, Feb. 19, at 5 p.m. Nominations are to be turned into 43 Owens Hall, c/o Lori Greiner (mail code 0223). A web-based nomination is also available at www.rdp.vt.edu/baird. For more information, contact Greiner at 1-8068 or e-mail at lgreiner@vt.edu.

Institute brings Horner in for keynote

The Institute for Connecting Science Research to the Classroom has arranged for noted paleontologist John R. "Jack" Horner to provide the keynote address at the institute's annual conference at the Hotel Roanoke, February 22 and 23.

Horner is curator of paleontology at the Museum of the Rockies in Bozeman, Mont. He has made hundreds of dinosaur discoveries, many of which have been highlighted on PBS and the Discovery Channel. Horner is scheduled to give the keynote address starting at 3:30 p.m. on Monday, Feb. 22.

The institute works with inquiry based learning in the K-12 environment and, while the audience for the conference will be K-12 teachers from throughout the state, Virginia Tech faculty members are invited to attend the keynote session.

For more details, see the institute's web site at <http://www.icsrc.org>, or e-mail: wenrich@vt.edu

University seeks nominations for exemplary departments and programs

Each year the university recognizes academic departments or programs that have demonstrated outstanding achievement in maintaining an excellent teaching and learning environment for students and faculty members. This year, the departments and programs will be recognized for their work in effectively linking research with teaching, with particular concentration on innovative undergraduate programs. The recognition includes two \$10,000 awards and a \$20,000 award to the departments or programs selected by a committee drawn from the university

community.

Nominations are encouraged from undergraduate and graduate students, faculty members, and others who have benefited from the work of the department in this year's topic. The award honors the collaborative efforts and successes of groups of faculty and staff members and students who actively perform work that is essential to sustain an excellent academic environment.

Letters of nominations (not to exceed two pages) should

describe the linking of research with particular concentration on innovative undergraduate programs/departments noting what aspects are exemplary. A nomination may address a broad range of activities or an individual activity which has made the department's contribution outstanding. Letters should be addressed to: Exemplary Department and Program Awards Committee, c/o Ronald W. Daniel, Office of the Provost, 330 Burruss Hall, CAMPUS 0132. The deadline for nomination letters is Friday, March 5.

Cardiac Rehabilitation Week open house scheduled

By Jean Elliott

The Therapeutic Exercise and Community Health (TECH) Center at Virginia Tech is observing National Cardiac Rehabilitation Week (February 7-13) with a special open house designed to increase awareness in health, nutrition, fitness and of the exercise programs available to residents of the New River Valley.

On Friday, February 12, the TECH Center will showcase its offerings with an open house at its location in War Memorial Hall from 7 to 8:30 a.m.

The open house is an opportunity to learn more about the center's supervised exercise programs and risk-factor-reduction services. Participants will also have access to free blood-pressure screenings, activity-level assessment, and may discuss any exercise or nutritional concerns with the professional staff. A continental breakfast will be served. Call 1-7277 for information. Those arriving close to 7 a.m. will have an opportunity to view all of the various programs in action.

For 22 years, the center (formally called the Cardiac Therapy and Intervention Center) has helped local individuals improve their cardio-vascular health and reduce their risk of heart attack

and other physical problems. It is a non-profit community service that is open to all residents of the New River Valley. It is operated through the College of Human Resources and Education's exercise-physiology program, in conjunction with the Human Performance Laboratory.

"Some people have the impression that we're only here for people who have heart disease or have had a heart attack," said Bill Herbert, who initiated the program in 1976 and continues to be involved as a consultant and administrative director. "The truth is, we serve people with a broad range of health concerns and goals. We can help people with a lot of other problems, including coronary risk factors such as high blood pressure, high cholesterol, or a sedentary lifestyle. We help people who have chronic health conditions such as diabetes, arthritis, or orthopedic problems. We can also help keep people from developing problems."

There are currently over 100 participants in the program, ranging in age from late-teens to mid-80s. The younger clients are usually dedicated to follow-up treatment for musculo-skeletal conditions or arthritis. Many of the older clients are

benefiting from the attention given to their arthritis, back, or other musculo-skeletal problems in addition to their basic programming aimed primarily at cardio-vascular concerns.

"Some people worry that they don't have the strength or stamina to exercise," said Jim Wright, TECH Center program director. "They ask if it is safe for them to exercise. In fact, the most unsafe thing you can do is NOT to exercise. You are never too out of shape to start, and in our program we determine what a person's capacity is, what will be safe, and what will be effective. Then we individually design a program and help that person achieve his or her goals in a controlled environment."

The TECH program's medically supervised exercises include walking, jogging, stationary cycling, rowing, resistance training, swimming, and aqua-aerobics. Services designed to reduce the risk of disease include nutrition and diet counseling, stress management, and teaching skills for lowering heart-disease risk factors. Each participant starts with a physician-supervised EKG exercise tolerance test to screen for cardiac problems and determine the safest and most effective exercise

(See REHABILITATION 8)

EMPLOYMENT

CLASSIFIED POSITIONS

The following classified positions are currently available. More details of these positions, specific application procedures and position-closing dates may be found on the Personnel Services web site at <http://www.ps.vt.edu>. Available positions are also listed on the Job Line, a 24-hour recorded message service: Office/Clerical: 1-6196; Technical/Research: 1-6160; Service/Trades: 1-6176; Professional and Managerial: 1-4649; Information Technology: 1-2233. Some of the following positions include state benefits. Positions with numbers beginning with a "W" are hourly and do not include state benefits. Comments about this shortened listing should be made to perserv@vt.edu or by calling 1-5301 or 1-6258 for persons with hearing impairments. Individuals with disabilities desiring assistance or accommodation in the application process should call by the application deadline.

To better serve applicants, the closing date for advertised positions has been changed to 1 p.m. Monday unless otherwise stated. An EO/AA employer committed to diversity.

FULL TIME

Laboratory Specialist Advanced, Food Science and Technology, 6375M.

Installation and Repair Tech. Senior, Video/Broadcast Services, 7288D.

Programmer, Administrative Information Systems, 7405D.

Executive Secretary, University Development, 2226D.

Programmer/Analyst, Administrative Information Systems, 6824D.

Housekeeping Worker, Donaldson Brown Hotel and Conference Center, 7299G.

Laboratory Specialist Senior, Environmental Health and Safety Services, 2756T.

Occupational Safety Compliance Officer, Environmental Health and Safety Services, 6571T.

Housekeeping Worker, Residential and Dining Programs, 721H.

Housekeeping Worker, Physical Plant, 7323P.

Distance Learning Specialist, Office of Distance Education, 7410D.

Food Operations Manager A/Sous Chef, Residential and Dining Programs/Dietrick Dining Hall, 7266H.

Fiscal Assistant, Residential and Dining Programs/Business Services, 2224H.

Programmer/Analyst, Information Systems, 7246D.

Computer Systems Engineer, Communications Network Services, 7414D.

Food Operations Assistant B (3rd Baker), Residential and Dining Programs/Southgate Bakeshop, 2986H.

Food Production Worker A (2nd Cook), Residential and Dining Programs/Owens Dining Center, W022480H.

Research Specialist, Crop and Soil Environmental Sciences, 7412M.

Instructional Technology Systems Manager, Educational Technologies, 2122D.

Locksmith, Physical Plant, 218P.

Painter, Physical Plant, 7417P.

Trades/Utilities Master Mechanic, Hampton Roads Agricultural and Research Extension Center, 4104M.

Administrative Liaison, Communications Network Services, 2325D.

Office Services Assistant, Human Nutrition Food and Exercise, 6614J.

Laboratory Mechanic A, Materials Science and Engineering, 7419J.

Program Support Technician Senior, Internal Audit, 2080T.

Research Specialist Senior, Fisheries and Wildlife Sciences, 7422M.

Computer Systems Engineer, Engineering Science and Mechanics, 6549J.

Enrollment Services Coordinator, Northern Virginia Center, 2094J.

Laboratory Specialist Senior, College of Veterinary Medicine, 7423M.

Senior Programmer Analyst, Institutional Research, 7421G.

Office Services Specialist, Communication Network Services, 802W.

Nutritionist (Deet's Place Manager), Residential and Dining Programs/Deet's Place, U938H.

Plumber Steamfitter, Physical Plant, 1926P.

Programmer, Administrative Information Systems, 6772D.

Senior Programmer/analyst, Administrative Information Systems, 7328D.

Housekeeping Worker, Residential and Dining Programs, 1076H.

Office Services Specialist, Aerospace and Ocean Engineering, 7237J.

TV Production Specialist, Athletics, LC054J.

PART TIME

Food Operations Assistant A, Residential and Dining Programs, W022314H.

Food Operations Assistant B, Residential and Dining Programs, W022315H.

Housekeeping Worker, Residential and Dining Programs, W022490H.

Program Support Technician Senior, Administrative Information Systems, W022294D.

Program Support Technician Senior, Administrative Information Systems, W022069D.

Food Operations Assistant B/3rd Cook, Residential and Dining Programs/Personal Touch Catering, W022562H.

Programmer, Communications Network Services, W022504D.

Laboratory Aide, College of Veterinary Medicine, W020811M.

Program Support Technician, Research and Graduate Studies, 7413J.

Electronic Technician Senior, Engineering Science and Mechanics, W022588J.

Accountant, Electrical Engineering, W022399J.
Office Services Assistant, Residential and Dining Programs/Facilities and Services, W022596H.

Health Educator Senior, Continuing Education, W022595G.

Animal Care Technician B, Veterinary Teaching Hospital, W022190M.

Housekeeping Worker, Schiffert Health Center, W020214G.

Office Services Assistant (Switchboard Operator), Communications Network Services, W022101D.

Fiscal Technician, Veterinary Teaching Hospital, W020810M.

Food Operations Assistant (Dishwasher), Donaldson Brown Hotel and Conference Center, W022603G.

Food Production Worker A, Child Development Lab, W022604J.

Office Services Specialist, University Registrar, W022413T.

Starter/Marshall/Shop Attendant, Golf Course, W020798G.

Programmer, Controller, W022605P.

Programmer, Administrative Information Systems, W022606D.

Computer Operations Technician, Computing Center, W022608D.

Pharmacy Supervisor, Veterinary Teaching Hospital, W022501M.

Switchboard Operator (Off. Services Assistant), Veterinary Medicine, W020821M.

Laboratory Technician, Plant Pathology, Physiology and Weed Science, W022612M.

Get Connected Technician, Administrative Information Systems, W022615D.

Office Services Assistant, Veterinary Teaching Hospital, W022260S.

Enrollment SVCS Assistant (Academic Adviser), Computer Science, W022613T.

Program Supt Tech (Visual Resources Curator), Art and Art History, W022616T.

Trades Helper/Carpenter's Assistant, Residential and Dining Programs/Facilities, W020219H.

Program Support Technician, Horticulture, W022617M.

Cashier/Hostess/Dining Room Supervisor, Donaldson Brown Hotel and Conference Center, W022614G.

Office Services Aide, Hospitality and Tourism, W022618J.

UNIVERSITY ONLY

Nutritionist (Deet's Place Manager) Residential and Dining Programs/Deet's Place, U938H.

OFF CAMPUS

Office Of Distance Education, 7410D.

Hampton Roads Agricultural and Research Extension Center, 4104M.

Human Nutrition Food and Exercise, 6614J.

Fisheries and Wildlife Sciences, 7422M.

Northern Virginia Center, 2094J.

INSTRUCTIONAL

Department of Marketing, Assistant Professor. Candidates must have completed, or be in the final stages of completing, a doctorate in marketing or a related field. The department is particularly interested in receiving applications from candidates whose doctoral work is in areas such as cognitive, social, quantitative, or decision-making psychology and behavioral or experimental economics whose work would relate to issues in marketing and consumer behavior. Applications will be reviewed on the basis of the candidate's potential to excel in both research and teaching. The anticipated date of appointment is Aug. 15, 1999. The search will remain open until the position is filled. Inquiries and applications should be directed to Kent Nakamoto, Dept. of Marketing (0236), Virginia Tech, Blacksburg VA 24061; 1-4878; e-mail nakamoto@vt.edu.

FACULTY POSITIONS

NON-INSTRUCTIONAL

Mobile and Portable Radio Research Group (MPRG).

Director of Information Services. MPRG, rapidly growing research laboratory of the Bradley Department of Electrical and Computer Engineering with efforts focused in the field of wireless communications, invites applications for the above position at the rank of research associate. Duties will include (1) system administration for a network of 20 Sun workstations, networked printers, and a growing number (50+) of Windows NT workstations, (2) purchasing, installation, and maintenance of computing equipment and software (3) technical support of electronic publications database and web site, (4) supervision of a team of students to provide user support for research and teaching activities of the laboratory, (5) long-term planning for growth of laboratories computing facilities. Expected qualifica-

tions include: (1) a B.S. degree in computer science, computer engineering, or a related field, (2) strong knowledge of Unix and NT system administration, (3) knowledge of HTML, C, C++, Ethernet, Unix, Solaris 2.6, Windows 95/98, Windows NT Workstation and Server 4.0, (4) excellent work habits and interpersonal communication skills. Qualified applicants should submit a resume and list of three references to B.D. Woerner, director, MPRG (0350), NEB, Virginia Tech, Blacksburg VA 24061. Applications will be accepted until position is filled.

Virginia Cooperative Extension, Director, Southwest Virginia 4-H Center (re-advertisement—revised job description). Virginia Cooperative Extension is seeking applications for director, Southwest Virginia 4-H Educational Center (position # FA305). Successful candidate will hold lecturer rank in a non-tenure-track, professional faculty position.

(See EMPLOYMENT on 7)

EMPLOYMENT*Continued from 6*

Salary is commensurate with qualifications and experience. Chief objective of the position: Work with the Board of Directors of Southwest Virginia 4-H Educational Center and program leadership of Virginia Tech and Virginia State Universities' Cooperative Extension programming to create a vision and implement strategies to realize enhanced community support for the center's outreach. Network with corporate/organization/agency heads in the development of a comprehensive educational program that meets the needs of the people in Southwest Virginia. Secure resources and develop, implement, and evaluate strategies to market the center to private and public user groups. Responsibilities: In concert with the leadership of the Board of Directors and Virginia Cooperative Extension, provide initiative to include policy development, resource development, fiscal management, educational program curriculum development, implementation, and evaluation. Provide leadership for public relations, fund raising, and the creation of long-term systems that will sustain program outreach of the Southwest Virginia 4-H Educational Center. Oversees day-to-day operations of the center. Meet with corporate/organization/agency heads, the center's Board of Directors, and VCE staff relative to the design, development, and implementation of a strategic plan for the center. Review programming efforts to determine if appropriate to meet the center's mission and goals. Meet with corporate/organization/agency heads, and the center's Board of Directors in the development of short and long-term financial support fundraising efforts. Develop a fiscal plan to achieve a strong fiscal support base for operations and capital improvements. Compile fiscal, educational programming, and other reports relative to the center's operation and growth. Establish procedures which support a balanced educational program available to all citizens as well as implement the VCE EO/AA Compliance Plan. Monitor and document center's programming efforts to identify that EEO/AA/CR/PN guidelines are followed. Work with the Board of Directors to identify and develop new members for the board to promote the best interest of the center. Work in a team effort with the program director to: Draft and establish policy and procedures as is needed for the center's operation. Oversee the establishment of positions; the development of job descriptions identifying work duties; recruitment, selection, and hiring; performance-assessment procedures; and other personnel actions involved in the management of human resources for the center's operation. Give leadership to the development of the center's budget and monitor the expenditures of funds; establish priorities

to assure that the staff conducts the center's business in accordance with set policy/procedures and that priorities are met. Qualifications: Master's degree required or imminent in business management, adult or youth education, or closely related discipline. Experience in business, development, personnel management, public relations, and marketing. Ability to communicate effectively, orally and in writing. Computer/computer software knowledge desired. To apply: Submit a letter of intent, a complete resume, official academic transcripts, and three letters of references. Internal applicants may submit a letter of application, a copy of the most recent faculty report, and three letters of reference. Review begins March 5, and continues until positions are filled. Send to Barbara Gillespie, Virginia Cooperative Extension (0437), 122 Hutcheson Hall, Virginia Tech, Blacksburg, VA 24061. Inquiries at 1-5659; fax: 1-5545; TDD user: 1-800-828-1120.

Virginia Cooperative Extension. Extension Agent, 4-H Youth Development. Restricted position, #FA630. Successful candidate will be lecturer rank, non-tenure-track professional faculty. Salary is commensurate with qualifications and experience. Manage a non-formal experiential education program for youth and adults working with those youth to further develop life skills necessary as self-directing productive and contributing members of society. This position is restricted to Sept. 30, 2000. Responsibilities: Agents must determine program needs by monitoring trends and issues, involving Extension leadership councils and advisory committees; design programs to meet needs of target audiences, specify program goals and objectives, and identify resources; inform clientele of program activities; use appropriate technologies to plan and deliver programs through workshops, seminars, conferences, one-on-one visits, field trips, and tours; maintain knowledge of current research information; develop computer applications; develop and implement evaluation plans; recruit and use volunteers; and report results to clientele, public, and administration. Qualifications: Master's degree or imminent in related discipline preferred. Current Virginia Cooperative Extension faculty members with bachelor's degree may be considered based on specialty, expertise, and performance. Ability to communicate effectively, orally and in writing; ability to recruit, train, and manage volunteers; experience in relating with people. Experience in planning, implementing, marketing, and evaluating education programs in a related area preferred. Computer/computer software knowledge desired. To apply: Submit a letter of intent, a complete resume, official undergraduate and graduate transcripts (copies are acceptable), and three letters of reference. Internal applicants may

submit a letter of application, a copy of the most recent faculty report, and three letters of reference. Review begins February 26, and continues until the position is filled. Send to Barbara Gillespie, Virginia Cooperative Extension (0437), 122 Hutcheson Hall, Virginia Tech, Blacksburg VA 24061. Inquiries: 1-7619; TDD user: 1-800-828-1120; fax: 1-5545; e-mail: barbarag@vt.edu.

Department of Biomedical Sciences and Pathobiology. Postdoctoral Positions. Ph.D. with experience in cellular and molecular immunology or molecular biology required to study immunology of cancer and immuno-toxicology supported by NIH grants. Send c.v. and names of three references to Mitzi Nagarkatti. Phone: 1-5035; fax: 1-7367; e-mail: mnagarka@vt.edu, Dept. of Biomedical Sciences and Pathobiology (0442), VA-MD Regional College of Veterinary Medicine or Prakash Nagarkatti. Phone: 1-5029; fax: 1-9307; e-mail: pnagarka@vt.edu, Dept. of Biology (0406), Virginia Tech, Blacksburg, VA 24061. Review begins February 15 until suitable candidate is found. For more information, visit web sites <http://www.vetmed.vt.edu/College/Faculty/Nagarkatti/Nagarkatti.html> and <http://www.biol.vt.edu/Facultypages/Nagarkatti/index.html>.

Department of Educational Technologies. Senior Instructional Designer/Evaluator. Successful candidate will consult and collaborate with faculty members to provide leadership on instructional design and course assessment/evaluation for both synchronous and asynchronous courses. Duties: guiding faculty members through the ID process; leading development teams; providing project-management support; conducting assessments of course-development projects; developing and leading workshops; and consulting on grant proposals. Qualifications: master's degree in instructional design or related field required; doctorate preferred. Three to five years relevant experience, preferably in higher education. Demonstrated ability to manage multiple-ID projects with competing deadlines. College teaching experience preferred. Demonstrated commitment to a strong service ethic. Excellent oral, written, interpersonal, facilitation, and organizational skills. Comprehensive knowledge of course-development software and processes. Professional faculty position, 12-month, non-tenure track. Salary commensurate with education and experience, with full benefits package included. Review begins March 4 and continues until position is filled. See <http://www.edtech.vt.edu> for additional position information. Submit letter of application stating qualifications, resume, portfolio URL, and three letters of reference (names, addresses, and phone numbers) to: John Moore, director, Educational Technologies (0232), Virginia Tech, Blacksburg VA 24061.

UNDERGRADUATES*Continued from 1*

selected nation wide for the \$1-million program. Each school will receive \$100,000 to construct its satellite and the Air Force and NASA will take care of the launching costs.

Hall said the Tech students will build two basketball-sized satellites, each weighing about five kilograms and containing a computer, power supply, and communications equipment. Orbital Sciences Corp. will provide materials for the satellites. Hall has requested technical assistance for the project from Orbital, the NASA Goddard Space Flight Center, and INTELSAT Corp.

The project was selected for its scientific-and-technology-demonstration potential, Hall said. The Tech-built satellites will orbit the earth for a month or more, measuring the effects of ionospheric irregularities, or scintillations, on Global Positioning System (GPS) signals. GPS is used for navigation and locating purposes by NASA, the military and aircraft, as well as by millions of individuals. "Even some weapons are guided by GPS now," Hall said.

GPS satellites orbit above the ionosphere, the region composed of layers of earth's atmosphere ionized by ultraviolet radiation. As GPS navigational signals are transmitted through these ionized layers to receivers on earth, insta-

bilities in the ionosphere cause scintillations in the signals. Problems arise when scintillations cause GPS signals to fade, resulting in errors in navigational signals.

The two Tech satellites will orbit in the ionosphere, taking scintillation measurements that could help scientists and engineers learn how to decrease the effects of irregularities on GPS signals and may add to the body of knowledge about radio-wave propagation. Hall said the students will design two satellites working in tandem because the Air Force and NASA are interested in the concept of launching flying clusters of small satellites in future communications programs. That way, if one satellite fails, the others can continue to carry out their mission. Hall is discussing additional formation-flying capabilities with professors at Utah State University and the University of Washington, who also have received grants under the Nanosatellite Program.

Another new technology that will be demonstrated by the Virginia Tech project is the use of GlobalStar communications satellites. One of the Tech satellites will have a GlobalStar telephone and will be able to place a call to the university for downloading science data. In addition to Hall, Scales and Stutzman, ECpE faculty members Nathaniel Davis and Jaime De La Ree, who have related research interests,

are working with the project.

This spring semester, the original nine AOE seniors—Ivan Acosta, Elbert Adamos, Adam Bram, Raphael Castillejo, Brendan McCullers, Kristin Makovec, Michael Powers, Anita Santiago, and Jana Schwartz—have been joined in the project by several other AOE and electrical-and-computer-engineering (ECpE) undergraduates.

Most of the original students will graduate this May, said Santiago, who chose this as her senior design project because of her interest in space design and her desire to pursue satellite technology as a career. This semester, she said, the seniors are helping to train the underclassmen who have joined the group. The most challenging facet of the project, Santiago commented, has been working as a team toward one unified goal.

Acosta, who is joining the Air Force after graduation in May and also wants to work with the space program, said the seniors and underclassmen will work this semester to complete the design and get the project ready for the next phase—actually building the satellites.

The project's schedule calls for the satellites to be delivered to the Air Force in Novem-

ber 2000. Later this year, Hall said, the project team will have to create a "clean" facility at Tech—similar to the dust-free facilities in which microchips are produced—for assembling the satellites and the GPS receiver hardware to be carried as payloads.

The College of Engineering has two laboratories, the Spacecraft Simulator Laboratory and Satellite Tracking Laboratory, that will be used in constructing and operating the satellites. The satellites from all 10 universities that have won grants in the NanoSatellite Program will be launched from the Space Shuttle in 2001.

The AOE and ECpE juniors who are working on the project this semester will help build the satellites during their senior year, Hall said. However, they will have to work on original design projects in addition to the satellites. The best solution? "I think as seniors they'll design the next generation Virginia Tech research satellites," Hall said.

ISE students gain international experience in France

By Karen Gilbert,

ISE public-relations coordinator

'In a world where frontiers no longer form a barrier to trade, technology, information or the exchange of ideas, it is essential for an engineering school to develop an international profile.'

The *Ecole des Mines de Nantes* School of Engineering was created in 1990 by the French Ministry of Industry, and was recently the destination of a group of Virginia Tech Industrial and Systems Engineering (ISE) faculty and students.

Located in Nantes, France, the school was designed as a tool for industrial development by providing high-level teaching and research

for select students. Forty percent of the student's time is spent on-site at industrial locations, which is meant to fully prepare the student for the industrial environment.

One of the founding principles of the *Ecole des Mines de Nantes* is that engineering skills alone are not sufficient for the engineer of tomorrow. The school's brochures states:

"In a world where frontiers no longer form a barrier to trade, technology, information or the exchange of ideas, it is essential for an engineering school to develop an international profile."

For this reason, the Industrial and Systems Engineering Department at Virginia Tech and the *Ecole des Mines de Nantes* have formed a partnership to prepare their engineering students to enter the work force with an international understanding. In January, ISE faculty members John Casali, Brian Kleiner, Subhash Sarin and Joel Nachlas, led four teams

of senior ISE students to Nantes, where they had the unique opportunity to work on industrial projects jointly with students from *Ecole des Mines de Nantes*. The trip for the students was made possible by the Virginia Tech Foundation Scholarship fund and coordinated through the office of Assistant Dean of Engineering Pamela Kurstedt. The ISE students who made the trip to Nantes, France included Alejandro Rivera, Elise Caruso, Julie Germain, Marc Petraitis, Steve Campbell, Doug Newhard, Catalina Rueda, Nehul Bhavsar, Rina Gursahaney, Vineet Harnal, Wendy Willis, Julia Rhoten, Joe Shenk, Scott Neilson, Gail Porter, Neveen Jaleel, Ryan Boyle, Rush Blevins, Jack Regler, and Dan Fass.

By working in collaboration with the students from the *Ecole des Mines de Nantes*, the ISE students discovered another cultural approach to a problem. Four challenges faced the student teams: Redesigning Mining

Equipment for Improved Performance and Operational Safety, advised by Casali; Preparing an Operations Recovery Plan, advised by Kleiner; Designing a Plant Layout, advised by Sarin; and a Quality Control Project, advised by Nachlas. The projects given to the student teams are actual problems faced by existing industries, the names of which are kept confidential. An ISE faculty member guided each team as they tackled their specific industrial problem.

The ISE trip to France also included an opportunity for the group to visit the *Aerospatiale* plant, which is Boeing's competition here in the United States. The *Aerospatiale* Group is a major international force in virtually every sector of the aerospace business, from aircraft and helicopters to space and defense systems.

CLASSIFIED

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attempted to craft an equitable distribution of the amounts designated for higher education. The House recommended funds for maintenance and operations of facilities and inflationary increases for materials and supplies for all institutions. The Senate similarly recommended increases in general operating support. For Virginia Tech, the amount recommended by both committees is \$1.6 million. The House funds are split into \$1 million for maintenance and operations of facilities, and \$600,000 for materials and supplies, while the Senate recommends \$1.6 million for operating support.

Programmatically, both committees recommended \$1 million for Virginia Tech to support high-demand programs in the information-technology area. This was the single largest budget-amendment request funded by either committee with the exception of indigent care funds for the University of Virginia and Vir-

ginia Commonwealth University hospitals.

Other amendments for Virginia Tech recommended by the Senate include \$100,000 for summer internships in certain disciplines for students from under-represented groups, \$100,000 to continue transgenic-tobacco field trials, and \$85,000 to support the arboretum and horticulture gardens. On the House side, funds were recommended for Solitude (\$25,000), and the National Geographic Alliance (\$25,000).

For the Cooperative Extension/Agriculture Experiment Station Division recommendations were modest as well. The Senate recommended \$100,000 and two positions for the Plan to Serve Virginia's Agriculture, Human and Natural Resources. The House recommended \$80,000 for materials and supplies and \$150,000 to pay for soil testing for farmers.

The two committees took markedly different approaches to capital outlay. In the House, almost all capital outlay is contained in House

Bill 1986, "The Higher Education and Related Facilities Bond Act of 1999," a \$300-million general-obligation bond proposal sponsored by Delegate Alan Diamonstein of Newport News. This bill contains \$32 million for Virginia Tech, \$25 million for the Upper Quad project and \$7 million for dairy-science facilities and a new livestock arena. If the bill is adopted by the full House of Delegates, it must then pass the Senate, be signed by Gilmore, and approved by the voters in November. A similar proposal died by one vote in the Senate Finance Committee last year.

On the Senate side, general funds were provided for capital outlay, including \$3.9 million for Virginia Tech's dairy-science facilities. The Senate also recommended \$784,000 in planning funds for the Upper Quad and \$456,000 in planning funds for the agriculture and forestry research facility. Both committees included language to allow Virginia Tech to take possession of 1,100 acres from the federal government at Ft.

Pickett that are being used for the Southern Piedmont Agricultural Research and Extension Center.

As previously noted, both committees recommended 6.25-percent salary increases for classified employees whose performance meets or exceeds expectations, to take effect Nov. 25, 1999. Faculty salary increases were appropriated last year and remain at an average of 5.8 percent for Virginia Tech faculty members, also beginning November 25.

The full House and Senate will vote on these proposals today. A small conference committee will then be appointed to iron out the differences between the two chambers. The conference committee must finish its work by February 23, and the General Assembly is scheduled to adjourn Saturday, Feb. 27.

For more information, contact the Office of Government Relations, 221 Burruss Hall, telephone 1-7111.

DUPONT'S

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Baird said, DuPont is donating equipment that will enable Virginia Tech researchers to produce composite sheets. One potential use for this capability is the construction of automotive parts made from light-weight, recyclable composite materials, a project that Baird and other Tech researchers plan to tackle in the future.

DuPont also is giving Tech a patent for the continuous rollforming of composites. "This is an exciting process," Baird said. Normally, a fixed mass of the composite sheets are pressed into molds to form parts. Rollforming is a method of continuously pressing composite sheets made from the wetlay process into desired shapes.

Baird said engineering researchers can use rollforming to devise methods for developing large composite infrastructure parts such as beams for bridges. Loos is interested in studying the potential of rollforming to produce low-cost structural parts for aircraft.

The gift-in-kind, along with any new applications, materials, and technologies that result, will be administered by VTIP, a private, non-profit corporation established by Virginia

Tech in 1985 to identify and market technologies and other intellectual properties belonging to the university. Additional support necessary to make the best marketing and research uses of the DuPont donation will be provided by the university, the College of Engineering, Virginia Tech Research and Graduate Studies, and the Virginia Tech Foundation.

"We are excited about this major gift," said F. William Stephenson, dean of the College of Engineering. "Virginia Tech values its long-standing relationship with DuPont and this donation of technology will enable our faculty members to continue their cutting-edge research in a vital area of materials science and engineering."

REHABILITATION

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program for them. That and other laboratory evaluations help the TECH staff personalize the participant's exercise prescription, medical supervision, diet analysis and recommendations, health-behavior counseling, and blood-pressure and heart-rate monitoring and recording.

In addition to medical personnel and other professional staff members, graduate students in clinical exercise physiology and undergraduate students in human, nutrition, foods, and exercise work with the professional staff to maximize individual attention provided to participants. "Moral support is at least as important as instruction and supervision," Wright said. "For many of our participants, the program is a social as well as a physical activity. Exercising with somebody is the key to motivation."

For more information about the TECH Center open house and programs, call 1-7277 or visit the center's web site at <http://www.bevnet/health/cardio/vtcard.html>.

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