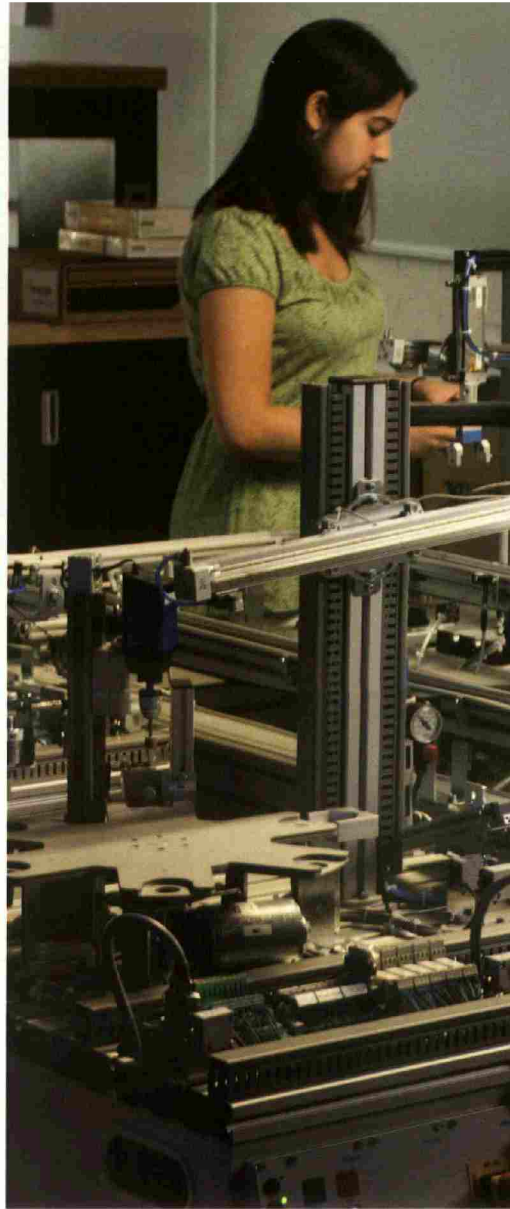
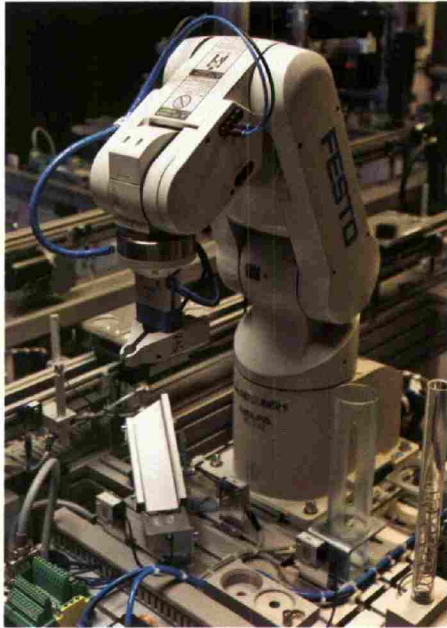


At Virginia Western Community College, a miniature production facility helps students train for industry in a new field called mechatronics.



Not Your Parents' College

Local colleges create cutting-edge programs to prepare students for the real world, 21st century.

By Paul Evans

Chalk marks trace the outline of a corpse, in a scene straight out of "CSI Miami."

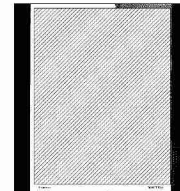
Elsewhere, young women conspire to shatter the "glass ceiling."

With robots they've built themselves, forward-looking thinkers engage in battle games.

A gleaming machine, behemoth-big and butterfly-sensitive, sorts widgets with omniscient precision.

Scenes from the college classroom, 2008? You bet.

Innovations in education are arriving with blinding speed. Overall, for many institutions of higher learning, the trend is to emphasize hands-on learning, experi-





ential epiphanies. More and more often, colleges in Roanoke and its environs are offering curricula that confront the 21st century with imagination, creativity and an impressive responsiveness to a changing world. And these local colleges are often at the forefront of national trends in specific fields.

Here's a sampler of some of the more exciting programs available locally.

TRAINING TOMORROW'S WORKERS

Because it takes up most of the Virginia Western Community College classroom, it dominates. Manufactured

by the German firm Festo, it's a brilliant machine.

Looking a bit like an ultra-sophisticated Lego construction, it features mechanical "arms" that assemble widgets and then take them on a mobile production-line journey – sorting and distributing them with almost eerie efficiency.

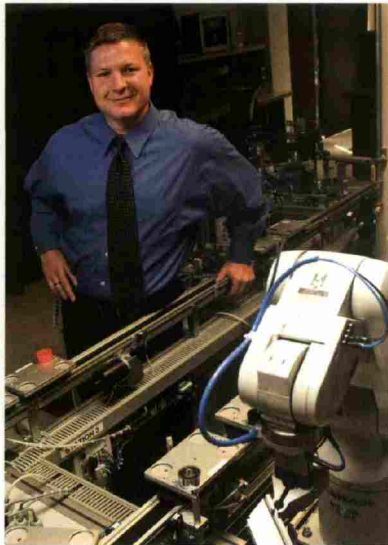
And it's the physical manifestation of the mindset behind the Virginia Western Regional Academy for Advanced Technology, a morning summer program for 11th and 12th graders from 11 local high schools. From Roanoke and Salem they come, and from Botetourt, Craig, Franklin and Roanoke counties.

As instructor Dan Horine keeps a watchful eye via computer, students load widgets and take them through every phase of production.

The program – and the Festo wonder worker – says Dan Horine, of the school's engineering technology division, is to get "young people excited about engineering and technology and manufacturing. And, yes, in this program, you see real passion."

The machine and the students who learn to operate it are engaged in "mechatronics" – a full-service approach to modern technology that combines mechanical engineering, electrical engineering, electronics, information technology and systems thinking.

The Festo machine is mechatronics in miniature. Forming teams, students work its various "stations" – production, assembly, distribution – and assign the machine various tasks via computer. By so doing, they learn



"In this program, you see real passion," says Horine – mirroring his students' excitement.

firsthand the process of manufacturing and distributing virtually anything.

Basically, it's a way of looking at the world around us – of computers and aerospace innovation, of machine tools and photocopiers – and understanding how it works.

Then they bring that knowledge to bear on a variety of projects that involve heavy-duty IT skills, teamwork and technical expertise. The workings of an ordinary household object – a hair dryer, for example – might provide them with a focus. They'll scrutinize its elements, its operation. They'll computer-analyze it, break it down and build it back up.

All in service of a zeal to fathom the "how" and "why" of the manufactured universe.

"This is where the future begins," says Horine. "And these students – and the knowledge they're gaining – are bringing us into that future."

Horine is also excited about two of Virginia Western's other premier programs. Quick Connect is a six-week intensive program that prepares workers – often previously unemployed or underemployed – for entry-level positions with Roanoke manufacturers.

"Industry came to us and said, 'We need people to work machines, control them, do minor troubleshooting,'" Horine says.

And through a partnership with the Virginia Manufacturers Association and the Virginia Biotechnology Association, the Virginia Council on Advanced Technology Skills provides employers with sponsorship opportunities to train workers at Virginia Western.

"These kinds of programs help us try to serve everyone," Horine says. "We're preparing kids to work at Carilion Biomedical Institute, Novozymes and more."

MULTIPLYING BUSINESS TEACHERS

All innovative education requires great teachers. But what happens when there aren't enough to go around?

That's a question Virginia Tech's Pamplin School of Business director of management and professional development Frank Smith intends to address when his school's Bridge to Business postdoctoral program debuts this summer.

There's a brain drain among business faculty nationwide. Older faculty are retiring, and new business majors are lured away from teaching to the likes of Goldman-Sachs or Smith-Barney. Foreign graduates often return home to India or Japan to foster homeland growth. The problem is big enough, Smith points out, that there are nearly 1,000 openings for business school faculty this year.

Solution? Enable candidates already holding Ph.D.s in nonbusiness, but related, disciplines to earn degrees qualifying them to teach business school courses at the graduate level. An economics professor, for example, could enroll in the Tech program's finance track; a psychology professor might embark on the study of marketing.

An eight-week intensive residential course

of studies, the program is endorsed by AACSB, the major accrediting body for business schools worldwide. And while four other universities – Tulane, the University of Florida, the University of Toledo and Grenoble Institute de Management – are adopting the strategy, Virginia Tech will provide the template as the first to put the promise into practice.

“It’s a very creative idea,” Smith says, “expanding the field with already established professionals who are excellent teachers and excellent researchers.” Business schools, the new program’s participants and business itself, he says, all stand to benefit.

A LIFE-AND-DEATH SCIENCE

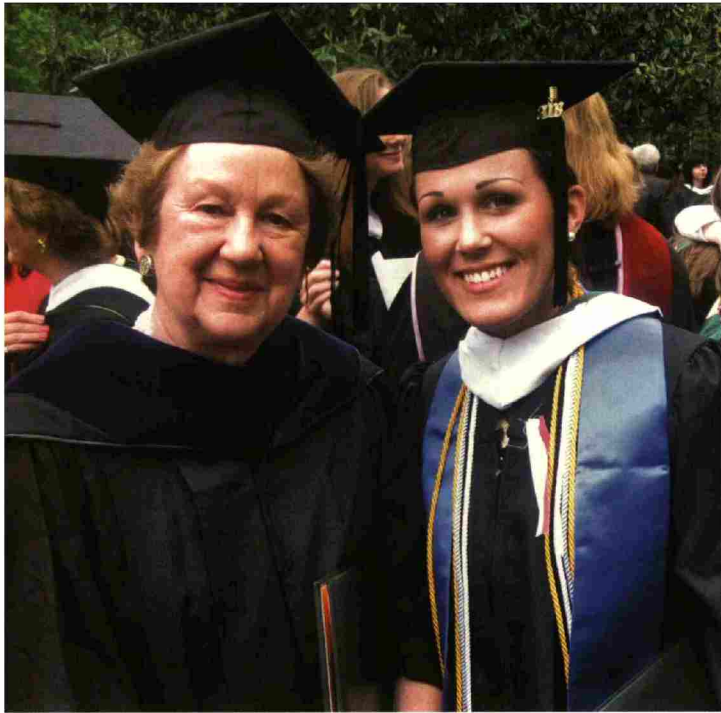
Furious, a distraught lover fakes her own kidnapping to frame her boyfriend. But then she ends up dead. Sample bags and tweezers in hand, investigators get to work. The ransom note is suspicious (penned with her lipstick); blood, fingerprint and footprint evidence alarmingly reveals more – as do painstaking analyses of hair and fibers, of ink stains, blood spatters and DNA. Soon enough, it’s case closed.

This is one of three “crime scenes” improvised throughout the Ferrum College campus, and cracking its code is the final exam for an interdisciplinary minor in forensic science. The minor is intended, says chemistry and physics professor Jason Powell, to satisfy curricular requirements of pre-professional science students but also to whet the appetites of undergrads for criminal justice careers.

Determinedly hands-on, the lesson plans link lectures and lab work to fulfill Powell’s pedagogical purpose: “I want to teach science in ways that emphasize its practical applications.” Class trips take students to a regional crime lab and a “body farm” – a morgue at the University of Tennessee – where they examine human remains and conduct microscopic reviews of real-life case studies culled from newspapers and search engines such as Lexis-Nexis. A thorough grounding in biology, chemistry and other hard science results.

And there’s a philosophical dimension that often emerges in class discussions.

“Spending time in the world of forensics and crime makes us realize the terrible things we do to each other,” Powell says. “It hammers home a naïve wish I have that the world were a kinder place. But maybe science can help to make it so.”



Batten Leadership Institute graduate Kate Sayers Martin, right, at Hollins' 2008 commencement with Jane Parke Batten, who with her husband endowed BLI.

A SISTERHOOD OF LEADERS

"These days, a woman embracing the challenges of leadership confronts not so much a 'glass ceiling' as a labyrinth," says Abrina Schnurman-Cook, executive director of the Batten Leadership Institute at Hollins University, "and BLI gives them the tools to negotiate that labyrinth."

The tools gained in the program's Certificate of Leadership Studies – self-confidence, negotiating savvy, team-building, project management and a visionary outlook – complement any student's major. The comprehensive methodology derives from the conviction that "leadership stems from the self; it's a matter of developing potential through personal growth," Schnurman-Cook explains.

With her background in counselor education, the director champions the institute's psychological approach to politics, workplace or otherwise, in a program that's the nation's only undergrad version of leadership studies.

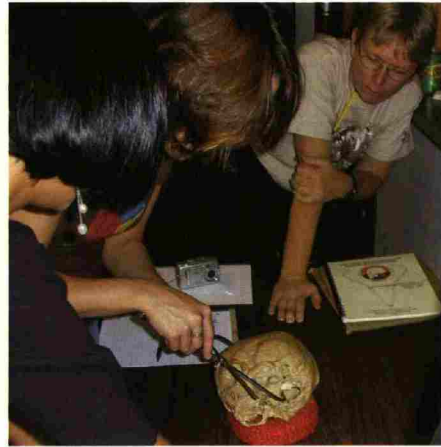
"Other programs, based on business school models, may train corporate leaders," she says, "but we're broader. We teach leadership across all domains."

BLI does so with classes that cover leadership theory and skills in tandem with student-designed leadership projects – an HIV/AIDS awareness initiative, for example, or a reading program for area public schools or an

on-campus collaboration to combat computer viruses. Throughout their studies, participants journal extensively and engage in candid self-examination seminars and videotaped presentations, all leading to a leadership capstone course wherein they serve either on the BLI advisory board or a local community board, thus gaining expertise in nonprofit board governance.

The institute is distinctive, too, in its demographic emphasis: the 800 young women who comprise the Hollins undergraduate population.

"Business has traditionally depended on a 'good old boy' network," says Schnurman-Cook. "We're about building a network of our own." That burgeoning network, composed of members of the millennial generation, has a double focus, she adds. "They're very concerned about quality of life. And about making conscious choices in their lives."



Ferrum College student Meaghan Hill tests craniometrics techniques under the watchful eye of lab supervisor Carol Love. Mary Rimasse, a criminal justice student, observes.



Student Morgan Davis led BLI's senior board training last year. Davis begins law school at the University of North Carolina, Chapel Hill in the fall.

For many of its graduates, making the choice for BLI remains profound in its resonance. As Sadie Tillery, a 2005 alumna, puts it: "It not only has it influenced the way I lead others, but how I lead myself in daily life."

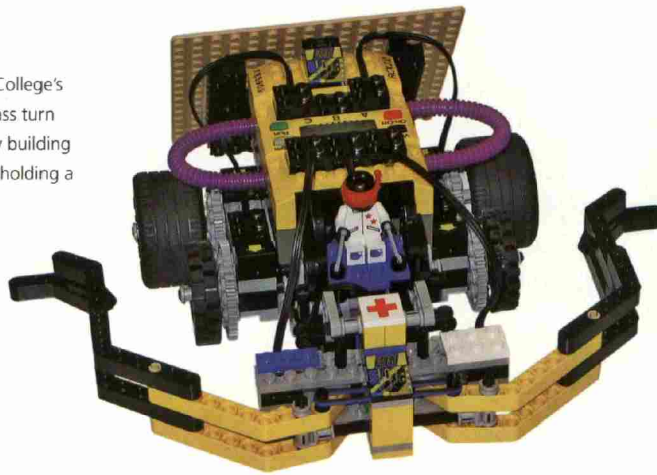
WHERE HUMAN MEETS MACHINE

"What does it mean to be human?" It's hard to imagine a more fundamental question, or a more futuristic context within which to raise it, than Jack Steehler's Robots and Society class at Roanoke College. Yet even while the class is blithely user-friendly – showings of the films "Terminator 2," "A.I.," and "Bicentennial Man" figure heavily – its emphasis is unabashedly existential.

"Consciousness? Emotions? What makes us special?" wonders the analytical chemist, who enjoys teaching a course that allows him to engage the humanities, to achieve a kind of right-brain/left-brain synthesis.

Utilizing such texts as Isaac Asimov's "I, Robot" and Rodney Brooks' "Flesh and Machines: How Robots Will Change Us," Steehler's students – interestingly, no science

Students in Roanoke College's Robots and Society class turn theory into practice by building Lego-style robots and holding a robot competition.



majors this semester – chronicle the saga of the man-machine from the 1920s, when the Czechs coined the word "robot," up to current controversies about human-technology interface such as genetic engineering, military robotics, and how text-messaging and cell-phone use affect human relationships.

The point is to get a tech-happy age group to muse more reflectively.

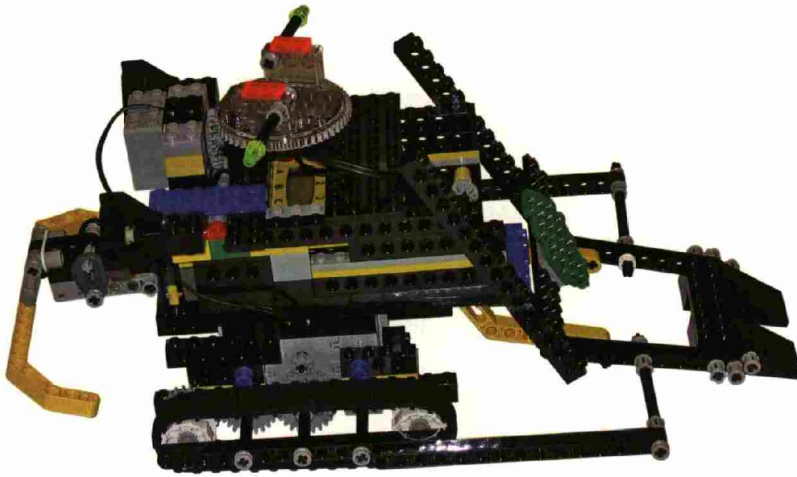
"They tend to be totally accepting of any new technology," Steehler says, "But they need to ask themselves: 'How will it affect

our lives and what we think of them?'"

The professor presents Robots and Society as part of Roanoke College's Intensive Learning mini-mesters each May, three-week-long seminars with saturation of subject matter.

Says Martha Kuchar, director of the IL program, the idea is to present students with "active, student-centered, nontraditional, experiential courses that require deep probing."

And that probing can be exhilarating. Consider other course offerings such as Demystifying Food, wherein a biologist exam-



JACK STEINLER

ines the effects on human beings of coffee and other kitchen staples; The Broadway Musical, in which participants write, stage and produce a bite-sized extravaganza; and Presidential Campaigns, which enables students to shadow big-time politicians working for Senators Barack Obama, Hillary Clinton and John McCain.

CARING IN THE COUNTRY

Country living has its charms, but it's more complex than you might think. That's one of

the core ideological tenets of Radford University's new Doctor of Counseling Psychology (Psy. D). program, the school's first doctoral program and one of the few in America to focus specifically on the mental-health concerns of rural populations.

Southwest Virginia will be the program's beneficiary, as its first graduates in 2012 will one day take up case loads in the Blue Ridge region, with each counselor serving hundreds of clients a year.

Substance abuse in the heartland – wheth-

er of alcohol, methamphetamine, OxyContin or marijuana – now rivals or even trumps the urban drug crisis, says program director Jim Werth, who hopes the new program will help farmers, coal industry workers and small-town dwellers deal better with these issues – as well as perennial ones of domestic violence, family dysfunction and economic hardship.

Poverty remains a keystone of rural stress, the Floyd County resident points out, with unemployment, outsourcing and factory closings intensifying residents' tendency toward depression, divorce or other forms of fracture.

Concerns of social justice, then, are part and parcel of the new academic program.

And that means being sensitive, Werth elaborates, to such indigenous "cultural values as independence and interdependence." Rural residents, he says, are a tightly knit clan that prizes both self-reliance and family closeness.

Confidentiality on the part of counselors is thus paramount – as is building a relationship of trust. Whether staffing hospitals or com-



JEFFERSON COLLEGE OF HEALTH SCIENCES

Jefferson College of Health Sciences' new degree program in health psychology will help students help others develop a fulfilling lifestyle.

munity service boards or undertaking house visits to clients, the initial class of Radford's Psy. D. program will be helped, Werth says, by the fact that, to a person, everyone is country born and bred.

WHAT MAKES PEOPLE CHANGE?

Why are we getting fatter? Still smoking? Drinking too heavily or putting off exercise? It may be our penchant for instant gratification, suggests Jefferson College of Health Sciences' Judy Cusumano, the arts and sciences chairperson heading up the new degree program in health psychology.

"We're hung up on short-term desires," she says, "chocolate cake or cigarettes or vegging out in front of the TV."

Combating those urges – and fighting the good fight toward a fulfilling lifestyle – is the mission of health psychology, a field that fuses a Deepak Chopra/Andrew Weil mindfulness about the metaphysical with traditional medicine's attention to the biological.

A psychologist with 16 years in private practice, Cusumano says that participants in her program will learn to be more well-rounded eventual health practitioners,

concerned not only with the "grades and MCATS" of orthodox med school, but also with developing the "people skills and communication abilities" to help future patients tackle one of the true – and very tough – necessities of achieving optimal well-being: changing behavior.

Developing empathy in her charges is one of Cusumano's special passions. And to do so, she not only requires students to take a first-person approach to psychological disorders in research papers, but also to occasionally participate in class as though those conditions were their own.

"They have to learn: 'What's life like for this kind of patient in everyday life – at the mall, or applying for a job, or dealing with a death in the family? It's about learning from that Native American proverb: Walk a mile in another's moccasins.'"

Emerging from the program with a thorough knowledge of basic psychology and its implications for physical health, graduates will be prepared, Cusumano concludes, not only to advocate for the joys of delayed gratification but to relish the joy of seeing how "doing good affects other people." ☆