

SOUTH DAKOTA TECH MAGAZINE

FALL 2004

Tech Ventures

Advancing
Economic
Development

p. 10

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Small Science, Big Opportunities p. 6
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...and much more!

Perspectives



Dear Friends,

As I write this brief note, I find it hard to realize that I am half way through my second year at SDSM&T. I have enjoyed getting out and visiting with alumni, friends of SDSM&T, and industry leaders to learn about their aspirations for and challenges facing Tech. At the same time, the campus has been hard at work to move us ahead in the new century.

I am delighted we are all of one mind — to build Tech into a small technological university of regional and national import.

We assert that we can be of significant support to South Dakota's economic development — our first responsibility — if we plan our future to include this wider perspective. As we report in the following pages, we are well underway. For example:

- Tech has joined with Brigham Young University, the University of South Carolina, the University of Missouri-Rolla, and more than 18 industry partners to create the first National Science Foundation Friction **Stir Processing Industry/University Cooperative Research Center** (I/UCRC). This center will advance the friction stir processing technology and provide great opportunities for our students.
- For the seventh consecutive year, Tech has been named one of **America's 100 Best College Buys**. We are the only institution in South Dakota to make the list.
- We recently dedicated the South Dakota **Tech Development Laboratory**, which will house several cutting-edge research activities and projects, all designed to expand our knowledge of science and engineering; solve the problems of industry, the military and government; and create economic development opportunities for South Dakota.
- Our computer programming teams finished in the **top 5%** of competitors in regional competition.
- Tech will begin offering a new **minor in Occupational Safety**. Very few engineering curriculums specifically address workplace safety. Students pursuing this new minor will learn how to identify, evaluate, and control hazards found in the workplace and they'll integrate these skills into their engineering and science careers.

These are exciting times, and I'm pleased to share them with you.

Very truly yours,

Charles Ruch

On the cover: Optical Fiber Bundle

Fiber optics play a vital role in today's technological world. Tech Ventures will pursue research projects with similar commercial potential, especially those being pursued by Tech faculty and researchers, and it will serve as a participant and owner/investor. Tech Ventures is a prime example of a concept known as Total Resource Development (TRD). TRD combines fund-raising with non-philanthropic business opportunities to generate additional revenue from all available sources. In today's economy, this old concept is becoming the hottest trend. *Story p. 10*

SOUTH DAKOTA TECH MAGAZINE

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South Dakota Tech Magazine is published by the Office of University and Public Relations.

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A New Look, New Features and ... a New Face!

South Dakota Tech Magazine begins the 2004-2005 academic year with a brand new look. As you'll see, we have updated the design and content to better meet the needs of our varied readers.

We've added a few new features that will tell you more about what's happening at South Dakota Tech. On pages 2 and 3, you'll find Tech Bytes, a collection of short news items. In each issue we plan to spotlight one of Tech's 16 undergraduate programs. On page 11 of this issue, you'll find our featured academic program, Metallurgical Engineering.

You'll also find more photos throughout the magazine than you have in the past. We've kept popular features such as Student Spotlight, Research Notes, Personnel Changes, and the Calendar of Events, so you can keep up with life at Tech.

We also have a new member of our staff, Steve LaMarine, who has joined Tech as Director of Marketing. Steve brings to Tech and to this publication experience from a long career in the educational publishing industry.

We hope you enjoy the new South Dakota Tech Magazine, and we'd love to hear your comments. Send your story ideas and thoughts to Julie Smoragiewicz at Julie.Smoragiewicz@sdsmt.edu.

Campus Profile

South Dakota Tech has been a national leader in preparing world-class engineers and scientists since 1885. Our graduates design, construct, and operate the most modern technology to meet complex challenges such as global warming, health care delivery, energy resource development, mineral extraction and processing, environmental quality, futuristic transportation, and national defense. Our alumni are held in the highest regard by their fellow leaders in industry, consulting, government, health, and education.

Tech continuously adapts to meet the needs of engineering and science. Rugged individuals and pioneers in engineering and science founded Tech's intellectual environment more than a century ago. Our faculty and students carry on that tradition today.

South Dakota Tech is a state university that provides graduate and undergraduate degrees in science and engineering, as well as an associate of arts degree in general studies.

Fall 2004 Enrollment:

- 2,345 students from 39 states and 20 countries
- Students enter the university with the highest ACT composite in the state and more than half graduating within the top 30% of their high school class.

Costs and Fees:

- Annual undergraduate costs for tuition, fees, books, room, and board total less than \$9,700 per year for South Dakota residents, and less than \$10,800 for residents of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Iowa, Minnesota, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, Utah, Washington, and Wyoming residents. Annual total costs for all other undergraduates is less than \$14,500.

Research:

- Researchers conduct high-quality research that benefits the state, the region, and the nation through advances in technology and economic development.
- In FY 2003, 52 researchers received \$12,744,117 in funding for 117 projects. Twenty-five agencies awarded research grants, including the Air Force Research Laboratory, Army Research Laboratory, NASA, National Science Foundation, Department of Energy, U.S. Forest Service, the State of South Dakota, and many others.

Faculty:

- South Dakota Tech employs 115 faculty members
- More than 87 percent hold the doctorate or other appropriate terminal degree.

Honors and Awards:

- One of America's 100 Best College Buys for the seventh consecutive year

Placement:

- Average starting salary offer to Tech grads: More than \$47,000
- More than 97 percent of 2002-2003 graduates placed in jobs in their career fields or graduate professional programs within 12 months.

Bachelor of Science Degrees

Chemical Engineering
Chemistry
Civil Engineering
Computer Engineering
Computer Science
Electrical Engineering
Environmental Engineering
Geology
Geological Engineering
Industrial Engineering
Interdisciplinary Sciences
Mathematics
Mechanical Engineering
Metallurgical Engineering
Mining Engineering and Management
Physics

Master of Science Degrees

Atmospheric Sciences
Chemical Engineering
Civil Engineering
Computer Science
Electrical Engineering
Geology and Geological Engineering
Materials Engineering and Science
Mechanical Engineering
Paleontology
Technology Management

Doctor of Philosophy Degrees

Atmospheric and Environmental Studies
Geology and Geological Engineering
Materials Engineering and Science
Nanoscience and Nanotechnology*

*Proposed new program pending the South Dakota Board of Regents approval

Tech Bytes

Research Vice President named



In a move aimed at building on the university's commitment to research, Tech has hired a Vice President for Research, **Dr. Gautam Pillay**. Dr. Pillay will spearhead programs that generate new knowledge and technology-based economic benefits for the state and the nation.

"Dr. Pillay possesses a significant record of accomplishment, evident by his many honors and awards, his membership in various professional organizations and his numerous professional publications," Tech President Dr. Charles Ruch said.

Pillay earned a bachelor's degree in Chemical Engineering from New Mexico State University and a Ph.D. in Chemical Engineering from Texas A&M University. He has a substantial record as a researcher and administrator in university and national laboratories.

Since 2001, Pillay has served as the executive director for the Inland Northwest Research Alliance, a nonprofit scientific and educational organization of eight research universities, and as a research professor at Idaho State University.

At the Research Alliance, Pillay was responsible for developing new collaborative research and educational opportunities for the member universities. He was also charged with developing strategic plans and business opportunities, monitoring contract and fiscal performance, and conducting federal relations activities with delegations from five states.

Between 1997 and 2001, Pillay served as a senior manager at Los Alamos National Laboratory. Prior to Los Alamos, he served at Pacific Northwest National Laboratory, Environmental Technology Division, for more than four years as senior research engineer.

In welcoming Dr. Pillay to his new post, President Ruch said, "Tech's strategy in the near future is to focus our research efforts in areas where we have, or can build, expertise. That will make us more competitive for research funding, and help us achieve our economic development goals. Dr. Pillay has the experience and skills to help us reach the lofty goals and expectations we've set for ourselves."

Dr. Pillay replaces Dr. Sherry Farwell, former dean, Graduate Education and Research, who now serves as the National Science Foundation's Director of the Experimental Program to Stimulate Competitive Research (EPSCoR).

Mining Engineering and Management Director

Tech has named **S. N. Shashikanth** director of the university's new Mining Engineering and Management Program.

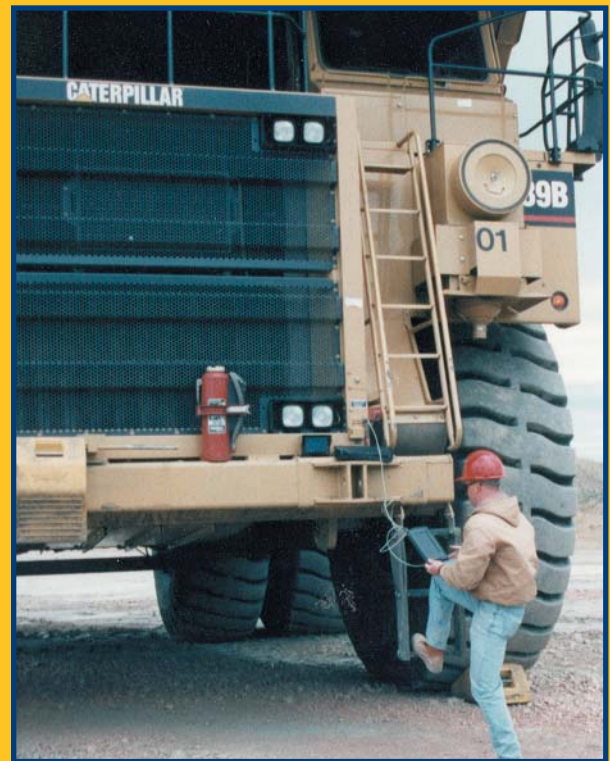


Shashikanth, who goes by the name Shashi, earned a master's degree in Mining Engineering from Tech in 1993. From 1993 to 2000, he worked for the Ensign-Bickford Company of Simsbury, Conn. While with Ensign-Bickford, Shashikanth performed technical

services for major mining clients in North America, India, Thailand, Korea, Malaysia, and Japan. He also was instrumental in the formation of a new joint venture in Asia.

Shashikanth then went to work for Modular Mining Systems, Inc., of Tuscon, Ariz. With Modular, he conducted consultative proposal and sales initiatives in North America and Asia. In 2002, Shashikanth moved to Special Devices in Moorpark, Calif., where he served as program manager for their new mining and blasting division.

Tech created the new mining management program to respond to needs of students and industry. The new



South Dakota Tech's new major, Mining Engineering and Management, will combine the engineering principles and business skills students need to succeed in the Mining industry of tomorrow. Tech began offering the new degree program in the Fall 2004 semester.

degree program combines mining engineering technical skills with management principles. The program was designed with the help of consultants, industry representatives, and South Dakota Tech Alumni. It will prepare students for the current needs of the mining industry, where the need for skilled managers far exceeds the current supply.

Tech Projects Receive \$15.2 Million in Defense Spending

South Dakota Tech received \$15.2 million in the 2005 Department of Defense budget for research projects designed to improve our nation's military.

"We truly appreciate all the work of South Dakota's delegation," Tech President Dr. Charles Ruch said. "It is the delegation's continued support that allows our professors and researchers to undertake projects that will make our military more efficient with new technology, while better protecting our troops in the field, and create opportunities for local economic development."

The 2005 Defense projects include:

- \$7 Million for Advanced Materials Processing for Future Combat Systems. (*Army Research Laboratory*)
- \$3.4 million for the Lightweight and Novel Structures for Space Program (*Air Force Research Laboratory*)
- \$1.5 million for the Next Generation Joining Technology Research Initiative (*Army Research Laboratory*)
- \$1.8 million for the Future Affordable Multi-Utility Materials for the Army Future Combat Systems (*Army Research Laboratory*)
- \$1.5 million for Nanotechnology Technologies for Defense Applications (*Armament Research, Development and Engineering Center ARDEC*)



Courtesy Photo

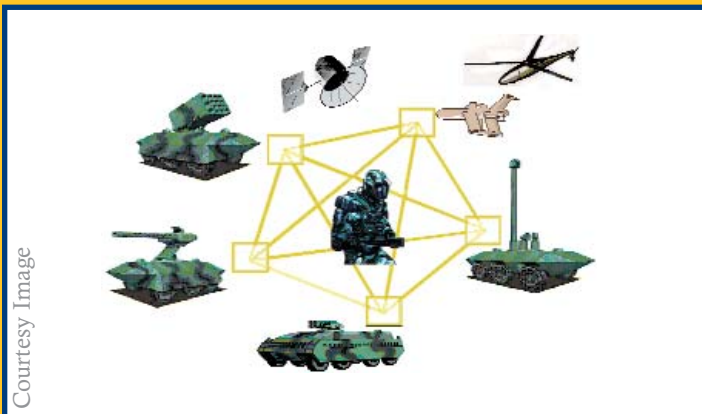
South Dakota Tech Grad Student Finds Rare Whale

In July 2004, Maggie Hart, a South Dakota Tech paleontology student, found a rare, beaked whale that washed ashore on St. Catherine's Island off the coast of Georgia.

At the time of her discovery, Hart, a master's degree candidate from Brea, Calif., was working on the St. Catherine's Island Sea Turtle Conservation Program. In her studies of sea turtles, Hart is collaborating with Mike Knell of Council Bluffs, Iowa. Knell also is a Tech paleontology graduate student. Their work augments studies of fossil sea turtles found in South Dakota.

Hart measured the 13-foot whale, photographed it and collected its skull for identification by Dr. James Mead at The Smithsonian Institution's Museum of Natural History. He identified it as a Sowerby's beaked whale, probably a yearling female. The Smithsonian will retain the whale's skull for confirmation and to serve as a voucher specimen for this rare species' distribution.

Almost nothing is known about the natural history of the Sowerby's beaked whale. They reach a length of approximately 18 feet long, travel in pods of up to 10 and presumably eat small fish and squid.



American Indian Initiatives



When Timothy Bull Bennett strode across the Rushmore Plaza Civic Center stage in May 2004 to receive his hard-earned doctorate from South Dakota Tech, he accomplished two additional things. He set a milestone by becoming the first American Indian student to receive a Ph.D. from Tech. He also set the stage for more Native American students to become part of the Tech community.

Historically, the population of native students and graduates at South Dakota Tech has been small, but it has increased in recent years.

In May 2004, nine American Indians received degrees from Tech, one of the highest numbers of any engineering university in the country.

This fall, more than ten Native American graduate students, and more than 65 native undergraduate students, are enrolled at Tech. Both numbers set university records.

South Dakota Tech has created a Multicultural Committee that will devise strategies to increase these numbers. Tech officials announced the formation of the Multicultural Committee during a press conference held in November 18, on campus. University, local school district, city, tribal college, and community representatives attended the event.

Tech wants to attract and keep more native students to meet critical but basic goals.

"Increased employment opportunities, accreditation, diversity," Dr. Jacquelyn Bolman, a member of the Multicultural Committee, said. "That's why we need to do this."

"As a university, we are making progress, but this issue is so important, we can't sit back and say we've done our job," Multicultural Committee Chair Dr. Al Boysen said. "We are talking about the American dream, and about making sure all students have the access and equity they need to pursue the education necessary to achieve that dream."

In the past two years, Tech has set several records. In the fall semester 2003, Tech enrolled 22 first-time American Indian students, the most ever. In the same semester, Tech had a total native enrollment of 65, also a record. Still, that number represented less than 4 percent of the student population, while Native Americans represent 8.3 percent of the South Dakota's population. Nationwide, only 315 American Indians graduated with bachelor's degrees in engineering in May 2003, the most recent national figures available. Between 2000 and 2004, 17 American Indians graduated from Tech with bachelor's, master's, or doctorate degrees.

Tech's Multicultural Committee has worked for several months forming the cornerstones of its work. During the current academic year, the Multicultural Committee, with membership from administration, faculty, staff, and students, will review previous diversity strategies, hear relevant testimony, and make strategic recommendations to President Charles Ruch by May 2005.

The strategies are expected to reach out to several target groups - the native community in Rapid City, students in kindergarten through 12th grade on South Dakota's reservations, and the participants and graduates of Tech's already-established American Indian outreach programs.

"This is not affirmative action," said Bolman, manager of special projects in Tech's Graduate Education and Sponsored Programs Department. "We are seeking students who can successfully do the mathematics and science, are interested in a science or engineering career, and are committed to four to six years of study."

Earning a degree from this university is difficult. It

Courtesy Image

always will be.”

When those qualified, interested, and committed students join Tech, they will have access to an integrated support system. Students will have a faculty or staff member who is a single point of contact and can help students deal with and overcome academic and personal challenges. Native students have other support mechanisms in place, such as the Office of Multicultural Affairs, the Minority Study Center, and a chapter of the American Indian Science and Engineering Society.

“We will make sure that students understand the steps they need to take to succeed,” Bolman said. “They will be aware of, and be able to navigate, the expectations and processes of this university. We know these students have the talent, and we know that they can succeed because we’ve seen it before. The success we have in the future will be built on the success of native students in the past.”

Recruitment of native students has evolved during the past several years. Multicultural Affairs staff have visited dozens of reservation schools, and given campus tours to hundreds of Indian students in kindergarten through 12th grade. Tech also hosts the NASA Honors summer program, the National Science Foundation’s Bridges to Success program, the NSF’s Fire Ecology Summer Camp, and other programs that bring native students to campus to learn mathematics and science skills and to connect with Tech faculty and staff.

“Recruitment and retention of American Indian students has improved because of the holistic approach we’ve taken to this issue,” Bolman said. “We don’t address only the academics. We pay attention to the whole student.”

Tech will continue those successful strategies, and incorporate others as it moves forward with this initiative. Boysen and Bolman expect that the strategies the university adopts will be applicable to all students. They also know that increasing diversity on campus will benefit all students while they are on campus, and after they receive their diplomas.

“Historically, the work ethic of South Dakota Tech

For years, South Dakota Tech has used outreach programs such as Scientific Knowledge for Indian Learning and Leadership (SKILL) and others to connect with the American Indian community in Rapid City and on the state’s reservations. Those outreach programs have resulted in the enrollment and graduation of native students who have gone on to successful careers in industry and government. Tech has a record of other accomplishments in its efforts to recruit and retain American Indian students:

- In May 2004, nine American Indians graduated from Tech, one of the highest number of native graduates from any U.S. engineering and science university.
- In May 2003, seven American Indians graduated from Tech, the most native graduates from any U.S. engineering and science university.
- In the fall 2003 semester, Tech enrolled a university record of 22 American Indians who were first-time college students.
- In May 2004, Timothy “Bull” Bennett became the first American Indian to receive a Ph.D. from Tech.
- During the 2003-2004 academic year, more than 450 American Indian students in kindergarten through 12th grade toured campus, visited laboratories, and met Tech faculty.
- In the fall 2004 semester, more than 10 graduate and 65 undergraduate Native American students were enrolled at Tech. Both numbers set university records.

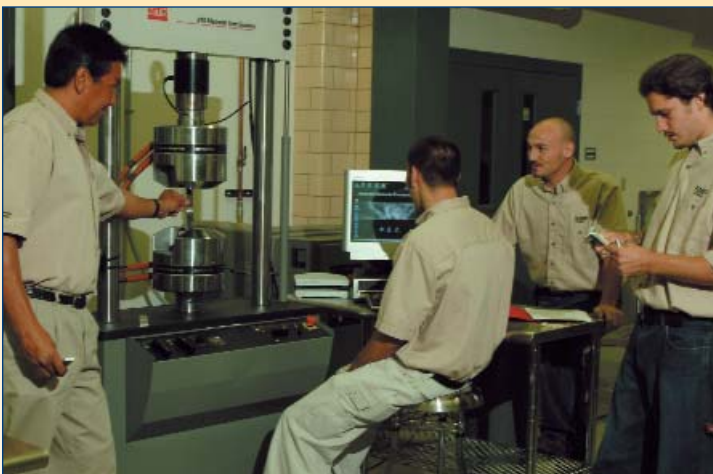
students was enough for them to get a start on a great career,” Boysen, a professor in the Humanities Department, said. “But we’ve moved into a different world where students need to have a global view. That’s what employers want, and that’s what increasing diversity can give us.”

Industry recruiters often ask about the diversity of a university’s student body before visiting. If the numbers won’t give a company access to a diverse sample of students, recruiters may go someplace else. A diverse student body also is an aspect of a university’s accreditation process. While accreditation agencies don’t set diversity standards, they do expect an effort to create a diverse student population.

“I don’t think it’s too extreme to say that the work we are doing here is the responsibility of all us in the university community,” Boysen said. “Our future is, indeed, in our hands.”

Boysen and Bolman see in that future a university that has changed organizationally, culturally, educationally, and financially, and where diversity is fully integrated with the university’s framework.

“We have a dream,” Bolman said. “We know we can succeed, and we know that the success of this initiative will improve the lives of citizens in South Dakota and in every place where our graduates live and work.”



Tech has used programs such as Bridges to Success to bring American Indian students to campus to work on research projects during the summer. Most of the participants attend tribal colleges and are interested in transferring to Tech.



Small Science, Big Opportunities

From homeland security to weekend sports, nanotechnology already impacts our daily lives.

As the field of study grows, it will have an even greater impact on the things we use every day, on our understanding of how matter works, and on the economic future of Rapid City, the Black Hills, and South Dakota.

South Dakota Tech plans to be at the forefront of what many believe will be the next Industrial Revolution. Dr. Shawn Decker, the new director of Tech's Center for Accelerated Applications at the Nanoscale (CAAN), will lead the university into this exciting future.

"Nanotechnology is important because of its many commercial applications that exist in our daily lives," Decker said. "When people hear about nanotechnology in the news, the reports most often discuss microscopic robots that are capable of amazing medical feats. Yet, there are so many examples of nanotechnology being used in the products that we purchase right now."

Those examples include:

- structural nanocomposites in the Toyota Camry
- active components in sunscreens
- low-wear textiles for our everyday clothing
- additives for better performing tennis balls
- coatings for high energy efficiency windows
- improved delivery of poorly soluble drugs
- better scratch resistant floorings for homes
- destructive adsorbents capable of neutralizing chemical warfare agents

Nanotechnology is an umbrella term that covers many areas of research dealing with objects measured in nanometers. A nanometer (nm) is a billionth of a meter, or a millionth of a millimeter. A human hair's diameter measures about 200,000 nanometers.

Tech received \$585,000 as part of South Dakota's 2010 Initiative to create CAAN. CAAN research will focus on the areas of nanoparticles and associated nanosensors, with particular emphasis on South Dakota mineral development.

"Part of the governor's 2010 Initiative is aimed at growing the state's economy by targeting investments in specialized research at South Dakota public universities," Tech President Dr. Charles Ruch said.

"We are confident that the research undertaken in our new research center will create economic development opportunities for South Dakota. I applaud Dr. Jon Kellar, Dr. Ken Han, and Dr. Sherry Farwell for their efforts in making this plan a reality. We also appreciate the support of Governor Rounds and the Board of Regents. Without them, this important project wouldn't exist."

Currently, at least eight Tech faculty members operate active research programs relating to nanotechnology. Many of those programs are sponsored by the U.S.

Department of Defense and span the traditional science and engineering disciplines ranging from chemistry to metallurgical and mechanical engineering.

“

I'm excited about the opportunities at hand.



Courtesy Photo

Shawn Decker

Director,
Tech's Center for Accelerated Applications
at the Nanoscale (CAAN)

"We expect to expand this research base with current faculty who are developing interests in nanotechnology," Decker said. "We also will add a number of faculty and graduate researchers with the planned implementation of the Nanoscience and Nanoengineering Ph.D. program at Tech."

The potential for continued waves of nanotechnology advancement is endless, and Tech is creating strategies to make sure those advances make South Dakota an even better place to live and work.

Decker will focus on cultivating the many excellent research programs at Tech and the other universities across the state to the point to where they can garner the interest and support of industry and government to solve real-world problems.

"If one can provide economically viable solutions, you've got a good chance at sustaining a competitive business," he said. "My efforts will focus on working with Tech's and the state's researchers to identify the commercial opportunities that exist for their nanotech programs, to understand the technical and economic hurdles that need to be overcome to produce a viable solution, and to help plan for the validation of their technologies which will ultimately lead to the creation of small, self-supporting, high-tech businesses located in Rapid City and the rest of South Dakota."

Decker admits that won't be an easy task. Creating any successful business requires much more than the desire to do so.

"There is an awful lot of hard work involved in starting a successful business," he said. But we are very fortunate to have state and local leaders who have the vision and commitment to build an environment that is conducive to high-tech ventures.

"I'm excited about the opportunities at hand. That's why I'm here."



Standing Together

“Let us put our minds together to see what we can build for our children.”



**TATANKA IYOTAKE,
SITTING BULL**
1831 (or 1838) - 1890
Hunkpapa Teton

South Dakota Tech is partnering with the Standing Rock Sioux Nation to assess the tribe's fossil resources and find ways to use them to create economic opportunities on the reservation.

The reservation, located in north-central South Dakota and south-central North Dakota, holds a significant number of dinosaur and other fossils.

“Those fossils offer the tribe a unique opportunity to develop their resources in a manner that is in line with tribal and federal statutes, cultural folkways, scientific ethics, and real-world economics,” said Dr. Gale Bishop, director of Tech's Museum of Geology and Paleontology.

Entering into a unique partnership, Tech's museum, the Bureau of Indian Affairs, and the Standing Rock Sioux Nation are collaborating in a new program to manage paleontological resources in an ethical and rational manner as a model for development of tribal resources across Indian Country.

The limited, non-renewable resources represented by fossil vertebrates and invertebrates form a resource that include scientific, aesthetic, cultural, and economic values. The new program, supported by a grant from the Bureau of Indian Affairs, is based on a scientific assessment of resources in the field being done by graduate students Ethan Morin (MS Pale, Woodbridge, Va.), Rebecca Burrows (MS Pale, Dyer, Ind.), and Mike Knell (MS Pale, Council Bluffs, Iowa) under Bishop's supervision. He is also working closely with management personnel from both Standing Rock and the Bureau of Indian Affairs.

The agreement between the three entities does not allow any collecting, only assessment. When the team finishes the assessment, it will prepare a confidential report for the Bureau of Indian Affairs (BIA), which will share the data with the Standing Rock Tribal Council.

The assessment team members are developing a plan to ascertain the extent and significance of the resource, advise the Standing Rock Tribal Council on their options for developing their resource as a new economic base for the good of the tribe, and thwart poaching of fossils from Indian trust lands.

“This process must necessarily be slow and deliberate to ensure that the multiple values of the fossils are protected,” Bishop said, “The helter-skelter digging of bones by untrained persons destroys all of these values and denigrates the bones of these ancient beasts to mere curios.”

The plan being developed includes training of tribal

members in geology and paleontology to develop a management cadre of Native Americans who will manage their own resources for the BIA and tribal entities.

“By next summer, we will have identified and hired two to four highly motivated science students from Native American populations at Tech and Sitting Bull College to work and be mentored by our graduate students in paleontology, and hopefully to be brought along to become professional paleontologists, prospectors, collectors, preparators, and managers of tribal paleontological resources,” Bishop said.

He added, “As this industry develops over the next few years, many Native Americans will find employment as guides, laborers, paleontologists, and management personnel,



but the process will take time, patience, and a lot of discussion and trust amongst federal, tribal, and Tech personnel.”

The project could also lead to the development of small tribal cottage industries to replicate casts of fossils to sell to eco-tourists who will visit the Standing Rock Reservation.

“In the meantime, we hope the tribal members and other citizens within the Standing Rock Reservation will continue to be responsible citizens and allow time for the process to develop and at the same time help protect the exposed remains for the good of the Tribe,” he said. Anyone seen collecting fossils on Indian trust lands should be reported to tribal enforcement authorities immediately.

The technical labor of prospecting, collecting, preparing, conserving fossils are skilled trades that could be taught to reservation residents, providing careers for as many as 50 people continuously for the next 40, 50, or 100 years. Supporting the skilled labor would be other positions such as painters, marketing staff, and others.

“The salaries supporting these efforts would stay in the local economy and be amplified as the money moves throughout the reservation,” Bishop said.

The original skeletons are of such interest to the public and to scientists, they could form the foundation collection for a museum on Standing Rock. The museum would be an attraction for tourists, scientists, students, and others.

“This is an exciting opportunity, and South Dakota Tech is glad to be a part of it,” Bishop said. “We believe this project will result in important new knowledge about dinosaurs and in improved economic conditions at Standing Rock.”

International Adventures Abound



When SD Tech civil engineering professor Tom Fontaine graduated from the University of Wisconsin, he traveled to Nigeria to use his engineering skills to improve the daily lives of Nigerians. The trip gave him practical experience, as well as the satisfaction of helping those less fortunate. Perhaps most importantly, it gave him a global perspective.

Since that time, Fontaine has never lost interest in traveling abroad and using his civil engineering expertise to help others. Now he has found a way to provide his students with the opportunity to work on international projects, so they, too, can learn the global perspective that Fontaine learned and that is so critical in today's world.

About a year ago, Fontaine learned about Engineering Ministries International (EMI). EMI is a non-profit organization made up of architects, engineers, and surveyors who donate their time, skills, and travel expenses to serve the poor and needy around the world, specifically in developing third-world countries.

EMI focuses on relief work such as hospitals, schools, training centers, churches, orphanages, bridges, and water supplies that will have a lasting impact on a local population.

The organization assembles teams of students and professional engineers and architects who visit an international site to meet with clients and collect data. The team then spends up to a year developing the final design.

"This unique professional and cultural experience provides students with a realistic and creative senior-design project," Fontaine said.

Not knowing what kind of response he would receive, Fontaine started to talk about international projects in his classes during the spring semester, and he announced that he was going to Guatemala over spring break. He got the attention of senior Brandon Quiett (CEE '04) who was looking for the right senior design project and was interested in traveling abroad. After much planning, Fontaine and Quiett left for Guatemala for 10 days

in March 2004.

Quiett and Fontaine spent their time in Uspantan, a remote village in the mountains of the Central American country. Along with approximately 10 other engineers and architects, some from the United States and some from other parts of the world, they helped design a one-acre school compound that will provide education and support for 700 students, kindergarten through 12th grade. Quiett and Fontaine also looked at the water resource management of the site, and Quiett designed a storm water collection and diversion system to assist with storm runoff.

"The preliminary design for the school is done," Fontaine said. "They are now in the process of fundraising, and they hope that the school building will be built in the next year. Both Brandon and I considered this a tremendous success which exceeded our expectations for the value of the engineering experience, the diversity of our teammates, and the intense cultural experience involved."

Fontaine's second trip was to Africa with junior Trista Rysewyk (CEE, Ellsworth AFB). The two spent two weeks in Mozambique, where they helped design a seven-

acre school for 1,000 students. The school building included several classroom clusters, an auditorium, offices, and a kitchen. On-site water supply and wastewater treatment were also designed, and Rysewyk worked on the structural design of the buildings.

"The trip to Mozambique offered an excellent engineering and cultural experience for both Trista and me," Fontaine said. "The days are long and the work is hard, but what we are



Dr. Tom Fontaine, professor, Department of Civil and Environmental Engineering, (back row, left) and Tech students traveled to Mozambique where their work improved the lives of villagers.



doing really is significant. We are directly helping an entire community. We are giving these children an advantage in life and encouraging the community as well. It is very rewarding”

Fontaine eventually hopes to spend a year on sabbatical leave in Uganda, to arrange for student and faculty exchanges in Africa, and to arrange annual international summer senior design projects for Tech students.

Fontaine’s experiences abroad have already begun to have a domino effect on campus, and two other students have volunteered for similar projects. Senior Mary Mateo (CEE, Rapid City) joined a design team in June in Guatemala to assist with master planning and design of new facilities for an existing conference and retreat center.

She is designing the water supply and wastewater treatment systems to upgrade the existing structures and expand the capacity to 600 people. Senior Adam Watterson (ME, Brandon) spent part of his summer in Honduras.

“Working with Engineering Ministries International was an eye-opening adventure that revealed to me how blessed we are in America,” Watterson said. “I also gained a better understanding of people from all over the world. Directly helping a person attain their vision was an experience I had never encountered in past internships. I was able to do this by applying my engineering skills while working with EMI.”

It isn’t just Tech students who gain from international experience. Fontaine said that the faculty, the university, and future employers also benefit. International programs give faculty the opportunity to teach innovative design



Dr. Tom Fontaine and several Tech students joined an international group of engineers to perform engineering projects in Guatemala.

skills and professional development and also to demonstrate the value of humanities and social sciences courses.

The integration of technical and social education through international projects also provides a unique way to demonstrate our achievement of the Accreditation Board for Engineering and Technology

(ABET) criteria, higher learning commission criteria, and general education core requirements.

“International design projects provide students with a unique opportunity for professional and personal development,” Fontaine said. “Experiencing a dramatically different culture such as a developing country can also be a catalyst in a student’s personal development and their perspective of the role of engineers in our society.”



Tech Ventures

Advancing Economic Development



Pappel said. "With Tech Ventures in operation, the Foundation will generate revenue the old fashioned way - we'll earn it!"

Tech Ventures is a prime example of a concept known as Total Resource Development (TRD). TRD combines fundraising with non-philanthropic business opportunities to generate additional revenue from all available sources. In today's economy, this old concept is becoming the hottest trend.

Tech Ventures will pursue research projects with commercial potential, especially those being pursued by Tech faculty and researchers, and it will serve as a participant and owner/investor. Tech Ventures may also assist these new companies in all aspects of starting up, from finding economic development support to finding investor capital, and even running the new company through start-up.

"By linking our efforts more closely with the private sector, we will increase revenues," Pappel said. "But even more important, we will enhance the quality and productivity of South Dakota Tech.

"The fundamental guiding principle is that the investment in, and recognition of, our faculty and staff is the route to excellence in all that we do," he said. "Through direct partnership and ownership, we will control our own destiny."

Another benefit of Tech Ventures is the ability to shape Tech students' learning experiences. According to Pappel, the strongest educational advantage offered by a research university like South Dakota

Tech is the ability for students to gain hands-on experience with faculty or staff members on research projects.

"The knowledge a student gleans when he or she works directly with faculty or staff on a project from its inception to its commercialization cannot be taught in the classroom," Pappel said. "A vertically integrated environment where students, faculty, and staff interact in applied research through product commercialization will be the prime driver to accomplish our goals."

Would be faculty and student entrepreneurs have a new resource to help them succeed. The SDSM&T Foundation now has a for-profit division called "Tech Ventures" that provides start-up expertise for campus enterprises.

Tech Ventures will use the profit from its activities to provide additional funding to the Foundation's mission of maximizing support to South Dakota Tech.

According to Rod Pappel, Foundation president, Tech Ventures will allow the Foundation to pursue new and unique funding sources during a time when traditional fundraising might not be as effective.

"Rather than be reactive and wait to receive, Tech Ventures will focus on generating new revenue sources which will in turn provide additional revenue to pursue institutional priorities,"



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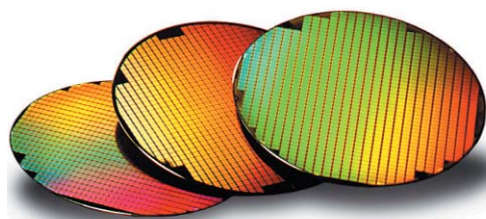


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To learn more about the Metallurgical Engineering program's prestigious accomplishments, go to <http://www.hpcnet.org/sdsmtmagazine/mete>





Students visiting from Imaichi, Japan, one of Rapid City's sister cities, visited Tech's Museum of Geology for a tour of the museum's dinosaur and mineral collections during the summer. Dr. Gale Bishop, director, Museum of Geology, and Dr. Kata McCarville, associate director, Institute of Atmospheric Sciences, served as one of the host families for the students.



Each year, the university and KOTA-TV honor the best and brightest high school students in western South Dakota during the

South Dakota Reaching Out



South Dakota Tech students provided the leadership to renovate Rapid City's 1911 historic fountain and return it to its place downtown. When the design and repair work was finished, the students, along with Tech faculty and local historic preservation officials, dedicated the fountain near its original spot at the corner of Seventh and Main streets.



A group of South Dakota Tech freshmen and international students volunteered with clients of the Cornerstone Rescue Mission to clean up trash and debris along Rapid Creek. The freshmen were



annual Best of Class event. The top graduating seniors from 27 high schools visit campus to be recognized for their outstanding achievements.

akota Tech ng Out



part of Tech's new Freshman Introduction to Real Success at Tech (FIRST) program that helps students adjust to life in college and helps them build connections with each other and with Tech.



More than one thousand of schoolchildren from across western South Dakota visited South Dakota Tech to experience FutureLab, a traveling exhibit that gave visitors a glimpse into the scientific and engineering advancements ahead. Visitors learned about robotics, nanotechnology, space, and medicine in the high-tech, hands-on exhibit. The exhibit is sponsored by The Student Loan Finance Corporation, of Aberdeen, and Scion, a division of Toyota.



At Tech's 2004 Concrete Conference, the university presented a Lifetime Achievement Award to William F. Rossi, who has spent 25 years in various technical and managerial positions in the cement, ready-mixed concrete, and precast concrete industries. For 40 years, experts in the field have attended Tech's Concrete Conference, which features seminars about advancements in concrete mixing, application, maintenance, and research. Tech also uses the opportunity to award those who have made outstanding contributions to the field. Also honored was keynote speaker Anne Ellis, who develops business initiatives for the Global Water and Environmental Services division of Earth Tech, an international environmental engineering, consulting and construction firm.

Vehicle Teams

Tech Just Keeps on Rollin' (and Hovering, and Floating, and)

In its first year in what may be the most complex



engineering and science competition for college students, South Dakota Tech applied determination and moxie to overcome a potentially devastating setback.

In the Unmanned Aerial Vehicle (UAV) competition at Fort

Benning, Ga., Tech's helicopter crashed in practice when the machine's clutch gave out. The team spent the next 10 hours designing a fix and repairing the helicopter before the next morning's scheduled competition flight. The team put the finishing touches on the repair minutes before their time would have run out. When the students lifted the helicopter off the ground, they flipped it to autonomous control, and held their collective breath.

"It hovered beautifully," team advisor Dr. Dan Dolan said. "They sent it commands, and it followed them perfectly. You can't imagine the feeling. It was the most exciting thing I've seen in years."

Team member Jeremy Banik agreed. "Watching our helicopter fly after crashing only 24 hours earlier was an incredibly fulfilling experience," the mechanical engineering major from Sioux Falls said. "It was truly one of the greatest moments of my life."

The Unmanned Aerial Vehicle competition is one of the engineering and design contests that Tech students use to sharpen their abilities. UAV competition helps them learn how to work as a functioning member of a team, and apply skills learned in the classroom to real engineering problems.

For the UAV team, the recovery from the crash was just the most exciting development of the competition, Dolan said. Judges and other teams didn't expect much from Tech in its first year, but the team received accolades from the judges during the event banquet for two reasons - the team's recovery and because Tech took second place during the static events.

"I wasn't surprised by how well we did, but other people sure were," Dolan said.

The competition, sponsored by the Association for Unmanned Vehicle Systems International, challenges students to launch an aerial vehicle, navigate a series of global positioning system waypoints and fly three kilometers to a complex of buildings. There, the vehicle must search the front of each building for a specified symbol.

Next, the UAV must launch a second vehicle that enters the building, captures video or photos of specific data and transmits that data back the starting point. The entire operation must be fully automated. In other words, once the

main vehicle is launched, the team members sit back and watch while their creations do their work. Or not.

Since the inception of the competition, no team has ever accomplished the entire mission. This year, only one team successfully navigated the waypoints and only one team even attempted to search the building complex. That proves the difficulty and complexity of the challenge, Dolan said.

The Tech team purchased an off-the-shelf, remote-controlled helicopter that served as the primary vehicle, and a four-rotor vehicle called the Draganflyer as the secondary vehicle. Team members successfully modified the helicopter to fly autonomously and are currently working to do the same with the Draganflyer.

The team is off to a great start, and they're looking forward to giving their competitors another taste of Tech's can-do spirit.

Who needs gasoline? We've got legs.

Tech's Human-Powered Vehicle team finished in sixth



place overall during the Human Powered Vehicle Challenge held at Oregon State University. The vehicles were judged on design and safety, and in sprint and endurance races against more than 25 teams from across the

country. The Tech team, which designed its bike so riders sit in a recumbent position, competed in the single rider events. The Tech team brought home second place in the utility vehicle competition and fifth place in the women's sprint competition.

Human Powered Vehicles (HPVs) are aerodynamic, highly engineered vehicles that may be for use on land, in the water or the air. Some land-based HPVs have achieved speeds of over 60 mph. The point of the competition is the elegance and ingenuity of the design, including presentation, practicality, and safety. All areas of engineering problem-solving are addressed.

Warming: Bumpy road ahead

Tech's Mini-Baja team finished in seventh place overall



in the 2004 Society of Automotive Engineers Mini Baja West competition held in Portland, Ore. The team also finished second in the rock crawl event and 10th in the acceleration event.

Tech competed against more than 85 engineering design teams from colleges across the United States, Mexico, and Canada. The Baja cars were judged on design, cost, and safety. Teams gave presentations about their cars, and showed off their performance during hill climb, maneuverability, and acceleration events. The Baja cars and drivers were also put to the test during the four-hour endurance race over rugged terrain that tested the durability of each vehicle.

Mini Baja simulates real-world engineering design projects and their related challenges. Engineering students are tasked to design and build an off-road vehicle that will survive the severe punishment of rough terrain. The object of the competition is to provide students with a challenging project that involves the planning and manufacturing tasks found when introducing a new product to the consumer industrial market.

Competing in the fast lane

The Mini-Indy team scored perfect marks in the



manufacturing part of the cost competition and placed 20th in the skid pad event during the annual Mini-Indy competition in Pontiac, Mich.

In the competition, students design, fabricate and compete with small formula style

racecars. The focus of Mini-Indy is not simply on who can build the fastest car, but rather on the use of engineering skills, financial know-how and creativity. Given certain car frame and engine restrictions, the competition tested students' knowledge, creativity and imagination. More than 140 teams from around the world traveled to the Pontiac Silverdome (Pontiac, MI) for the event. The Tech team finished in 74th place overall.

Modeling engineering skills

The AeroDesign team finished in 21st place during the recent AeroDesign West competition in Texas. The AeroDesign competition challenges engineering students to conceive, design, fabricate and test a model radio controlled aircraft. The competition is divided into two parts - design and flight. In the design event, the contestants present their design strategy and demonstrate the accuracy of their calculations in predicting the maximum payload the aircraft can lift. The flight event determines which aircraft can lift the most weight. The competition limits the wingspan of each aircraft, and requires each plane to take off and land within a limited distance.

Not exactly R2D2, but close

One of Tech's robots finished in third place during the



Institute of Electrical and Electronics Engineers (IEEE) regional robotics competition held in Oklahoma City, Okla. Dozens of teams representing universities in Texas, Colorado,

Louisiana, Missouri, Oklahoma, and South Dakota entered robots in the competition. Tech entered three robots, and won third place with "Flash."

Teams had to design and build autonomous robots that could follow a black line track in the fastest time possible. The track contained various intersections, line disappearances, ramps and turns. Each of these situations was preceded by a symbol on the track that the robots could detect. The robots needed to interpret and act on the symbols correctly to achieve the most efficient path to the finish line.

Bridging engineering challenges

The Steel Bridge team finished in fourth place during



competition at Colorado State University in Fort Collins, Colo. The competition is an annual event that requires student teams to design, fabricate, and construct a 1/10 scale model of a steel highway bridge. This year's completed bridge was 25

feet long and weighed approximately 180 pounds. It was judged on the basis of weight, stiffness and speed of construction.

Concrete floats? You bet!

The Concrete Canoe team also finished in fourth place during competition at Colorado State University in Fort Collins, Colo. The team's canoe was judged on appearance, weight, presentation, and races in men's sprint and endurance, women's sprint and endurance, and co-ed. Far from the floating bathtubs you might envision, concrete canoes competing at the national level typically resemble Fiberglas racing canoes and boast sophisticated designs aimed at achieving the best combination of speed and maneuverability. Many of the canoes weigh less than those constructed of traditional materials and feature walls only 1/4-inch thick.



2004 Star of the West Speaker Series

Experts on the subject of nanotechnology and economic development came to South Dakota Tech in November for the Star of the West Speaker Series and to discuss issues important to the region's economic and intellectual future.

The event's speakers focused on the place of nanotechnology and technology in science and society, and the impact it can have on developing economic opportunities in Rapid City and South Dakota. Hundreds of faculty, staff, students, and community members attended.

We were pleased to offer the Star of the West speaker series to the community," Tech President Dr. Charles Ruch said. "It gave us a chance to discuss relevant and important issues in which we all have a stake."

James Von Ehr, founder, chairman and chief executive officer of Zyvex Corporation, based in Richardson, Texas, served as the event's keynote speaker.



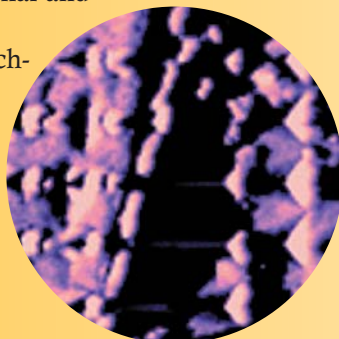
Von Ehr is a respected leader within the nanotechnology industry. He is an invited member of the Nanotechnology Technical Advisory Group to the U.S. President's Council of Advisors on Science and Technology. He currently serves on the Board of Directors for the Texas Nanotechnology Initiative, the NanoBusiness Alliance, and the Executive Committee of the Metroplex Technology Business Council.

Earlier in the day, a panel discussed strategies for expanding technology-based economic development opportunities in Rapid City, the Black Hills, and South Dakota.

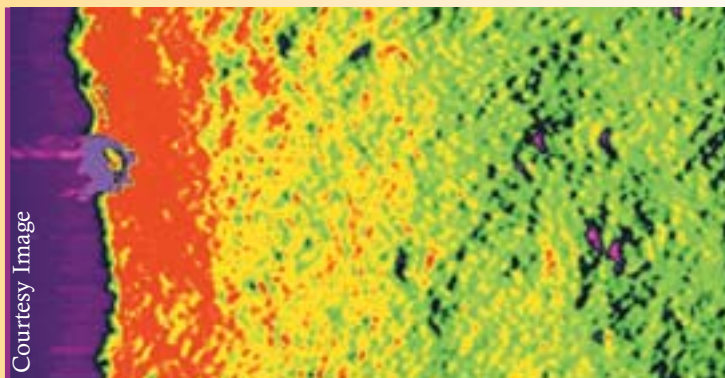
The economic development panel included:

- Dr. Jeffrey Henderson, President and CEO, Black Hills Center for American Indian Health
- Tom Katus, President, TK Associates International
- Mark Merchen, West River Electric, and First Vice Chairman, Black Hills Vision
- Dale Skillman, Assistant Professor, Mechanical Engineering, South Dakota Tech; Small Business Innovation Research (SBIR) Coordinator

A different panel of national and local experts discussed the national landscape of nanotechnology, including its societal implications as well as educational issues and how nanotechnology could impact economic development and manufacturing.



Courtesy Image



Courtesy Image

That panel included:

- Dr. Donald R. Baer, a laboratory fellow at the William R. Wiley Environmental Molecular Sciences Laboratory, located at Pacific Northwest National Laboratory in Richland, Wash. He addressed nanotechnology educational issues.
- Dr. Davis Baird is a professor in the Department of Philosophy at the University of South Carolina. He addressed the societal implications of nanotechnology research.
- James Von Ehr, founder, chairman and chief executive officer of Zyvex Corporation, based in Richardson, Texas. He will discuss the economic development and manufacturing implications that could stem from nanotechnology.

The speaker series was possible because of a donation from Ray and Barbara Graham. The Grahams, of Rapid City and Albuquerque, N.M., have a long history of supporting arts-related activities. The Grahams support the series because they wanted to provide students, faculty, staff, and the community access to experts at the national level who can challenge us to consider new ways of thinking about important issues.

"We appreciate Ray and Barbara's donation," Ruch said. "This event wouldn't be possible without their support."

That support has allowed Tech to make all the events free and open to the public.

Special thanks to Black Hills Vision for arranging for transportation for Mr. Von Ehr.

For information about the event, call (605) 394-2554. Visit the Star of the West Speaker Series website at www.sdsmt.edu/starofthewest.

Looking almost like lunar topographical images, these figures are atomic force microscope (AFM) images of a polymer next to a glass fiber. Fibers in polymers make up a class of advanced materials called composites. Composites that are being developed or improved at the nanometer scale could impact Technology-based economic opportunities in Rapid City and South Dakota.

Amie Garcia (Geol, Sioux Falls), was selected to participate in the Research Training Program of the Smithsonian Institution's National Museum of Natural History. Garcia was one of just 20 students selected from 215 applicants nationwide.



Smithsonian

The Research Training Program is a 10-week, in-residence, museum-based program designed for students interested in a career in natural history research, especially systematic biology, geology, and anthropology.

Garcia is interested in the areas of tectonics, paleomagnetism, volcanology, and vertebrate paleontology. She has received the Pacific Investment Management Company Scholarship and the Gries Geology Fellowship.

Tyler Engstrom (Met, Vermillion), along with Dr. William Cross, Instructor and Research Scientist III, and Dr. Alan Anderson, Instructor and Research Scientist II, Department of Materials and Metallurgical Engineering Department, attended an intensive, three-week Nanotechnology short course held at Pacific Northwest National Laboratory (PNNL). The experience gave the group a chance to work in the PNNL their labs and learn about the emerging field of nanotechnology.

Brooks Henderson (MS MES, Rapid City) participate in the Air Force Research Laboratory's prestigious Space Scholar program. Every student selected participates in a research project alongside a laboratory researcher. The researchers function as mentors and offer close support and guidance to the students carrying out the research. All Space Scholars are competitively selected on the basis of their scholastic achievement and potential contribution to research. Space Scholars have made significant contributions and with their mentors have published scientific papers in professional journals. Brooks also holds a bachelor's degree from Tech

Micah Peters (Csc and ME, Spearfish) is serving as Student Association President, and

Briana Bichler (Met, Tomball, Texas) is serving as Student Association Vice President at South Dakota Tech.



Student Spotlight

Jeff Guenther (IE, Yankton) was elected Homecoming King, and **Candace Kucharzak** (CEE, Biloxi, Miss.) was elected Homecoming Queen during Tech 2004 M-Week festivities. The royalty, selected by students, presided over the M-Week parade and the Homecoming football game, both held September 25.

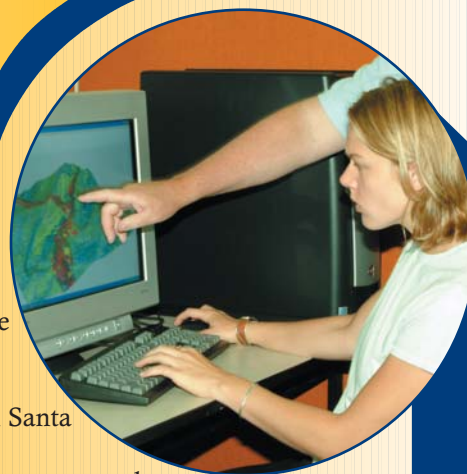


The South Dakota Tech chapter of the **American Chemical Society** has received a Commendable award for chapter activities conducted during the 2003-2004 academic year. The award is particularly significant in that there are 960 ACS chapters. Only 26 chapters received either Outstanding or Commendable awards, placing Tech in the top eight percent.

Erin Landguth (PhD AEWR, Rapid City) participated as a research scholar in the Complex Systems Summer School held during the summer in Santa Fe, N.M.

According to her acceptance letter, Landguth was chosen because of "your unusually strong application. We hope very much that you will accept this invitation to attend the school."

The Complex Systems Summer School is an intensive introduction for graduate students and postdoctoral fellows in the sciences and social sciences to complex behavior in mathematical, physical, living, and social systems. The topics this year included cancer as a complex adaptive system; neuro-cognitive development; ecological dynamics and robustness; and interactions between physics and computation. Erin also holds bachelor's and master's degrees from Tech.



Tech Names Dormitory 'Howard Peterson Hall'

In his more than 50-year relationship with



South Dakota Tech, Dr. Howard Peterson has become a cornerstone of what the university represents. In recognition of his contributions, Tech has named its new, student-centered dormitory, "Howard Peterson Hall."

"I am delighted to announce that the Board of Regents approved our request to name the new residence hall in honor of Dean Pete, in recognition of his long relationship with South Dakota Tech," university President Dr. Charles Ruch said. "Dean Pete is a Hardrocker to his core, and his contributions to this university have helped make it what it is today."

Peterson has a long legacy at Tech. A native of Alpena, he attended Tech in an era when most students were veterans of World War II, and few were traditional, out-of-high-school youngsters. Howard was one of the youngsters. He was active in many campus organizations, and received a bachelor's degree in Geological Engineering in 1950. After working in oil exploration, he taught high school in eastern South Dakota. During his teaching years, he earned a master's degree in Education in 1955 from Northern State Teachers College. He then returned to Tech and was appointed assistant dean of students. He later earned a doctorate in Education from the University of South Dakota.

From the 1960s until his retirement in 1992, Peterson truly was a personal friend of most Tech students. He retired as dean of students only to immediately play a leadership role that made a significant impact on the very successful, first-ever capital campaign in the university's history. Peterson continues to mentor students as an advisor, as a member of several university boards, and as chairman-emeritus of the SDSM&T Foundation Board of Directors.

"Dean Pete's service to South Dakota Tech can not be understated," Ruch said. "It's people with his kind of commitment who make this university the very best it can be and allow us to help students achieve their dreams."

Hall of Fame Opens

South Dakota Tech and the Hardrock Club have opened the Christensen Hall of Fame located in the new addition to the King Center on campus.



Construction of the Christensen Hall of Fame addition to the King Center was completed in April 2004, and is an integral part of the Hardrock Club Golden Anniversary Campaign. The

Hall of Fame will honor past athletes, coaches, teams, athletic traditions and contributors by permanently dedicating a place to remember the past and to look to the future with pride for what Tech stands for on the playing field and in the classroom. The \$1 million dollar Golden Anniversary Campaign will also add \$600,000 in scholarships and \$100,000 to support recruiting and supplement athletic department needs.

The Christensen Hall of Fame also will honor Jim and Nancy Christensen, longtime supporters of South Dakota Tech. The Christensens' ties to South Dakota Tech and its athletic programs run deep. While Jim was a Tech student in the 1950s, he was a member of the Hardrocker football and track teams. He graduated from Tech with a degree in general engineering in 1957.

Tech Holds 149th Commencement

South Dakota Tech held its 149th Commencement on May 8 in the Rushmore Plaza Civic Center arena.



More than 260 undergraduate and graduate students received degrees. In addition, 15 alumni who graduated 50 years ago attended the ceremony and received certificates commemorating their

graduation.

Nick Newell (CEng '04) represented the student body. Newell, of Havre, MT, graduated magna cum laude from Tech. During his four years at Tech, Newell has been freshman and junior class president, captain and choreographer of Hot Rockers dance team, an actor, writer and director in Drama Club, and a member of Tau Beta Pi and Eta Kappa Nu honor societies.

Grove Rathbun (Mine '52) received the March Medal. Rathbun dedicated 33 years of his professional career to U.S. Steel Corporation, working as a mining engineer in northern Minnesota and as an industrial engineer in Pennsylvania. During his distinguished career, Col. Rathbun also served a combined 27 years in the U.S. Air Force and the Air National Guard flying jet interceptors and fighter-bombers.

Dr. Paul MacCready delivered the commencement address, and was awarded an honorary doctorate. MacCready is a meteorologist, inventor, world champion glider pilot, and explorer of new horizons in conserving energy and the environment, and a visionary in teaching thinking skills.

Opp Laboratory Dedicated



South Dakota Tech dedicated the Roger Opp Laboratory in the McLaury Building. Opp, a professor in the Department of Mathematics and Computer Science, has taught at Tech since 1966.

"Roger Opp is an icon in the department," said Dr. Toni Logar, a professor in the department. "He has set the standard for excellence in the classroom for 35 years - not just in our department, but across campus. When alumni name the professor who had the biggest impact on their educations, and I can almost guarantee that if that person had Roger, they will say Roger. We wanted to recognize that extraordinary achievement."

The laboratory is important because it is a dedicated assembly language/Linux lab. Tech's computer science program is one of the few that gives computer science students a solid foundation in hardware and programming fundamentals, Logar said.

"One of the reasons we are so successful at it is because Roger Opp has developed the best assembly language course in the country," Logar said. "Our students are sought by employers for these skills, even in tight job markets."

"We're proud of the lab as a faculty because we put so much sweat into it, and we're proud of what it gives our students," she said. "But we are really proud of what Roger teaches them in that lab — it is extraordinary."

M.A.P.S. Laboratory Dedicated



Tech has dedicated the Dow Corning Foundation Enhanced Materials, Automation, Processing, and Simulation (M.A.P.S) Laboratory, located in the Chemistry Building.

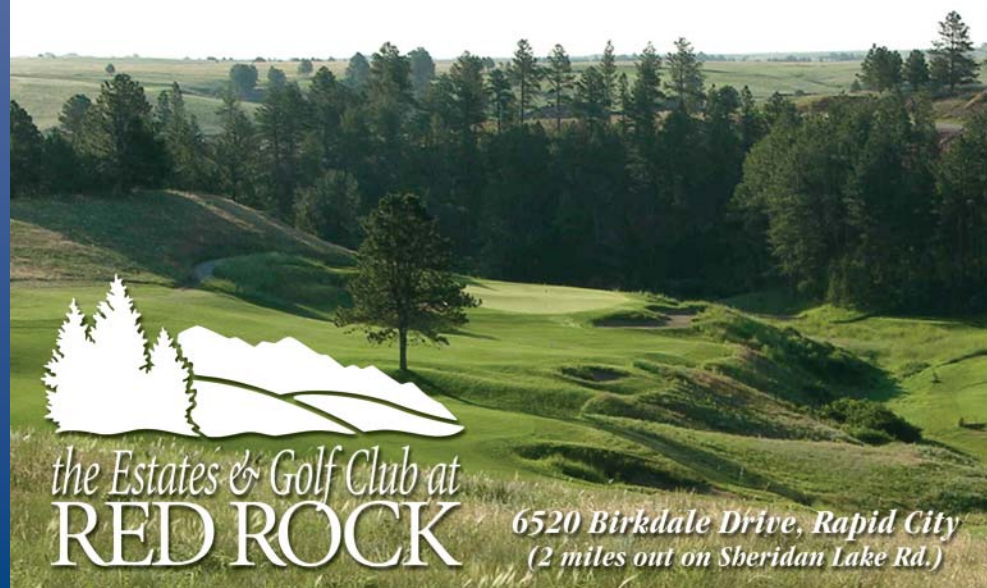
Tech partnered with Dow Corning in an effort to keep up with the fast pace of changing industrial technology. The partnership resulted in Dow Corning Foundation awarding \$200,000 for the M.A.P.S. Laboratory in the Chemical Engineering program.

The laboratory represents an innovative and practical approach to chemical engineering education. Through laboratory experiences that build in complexity, students integrate experience in materials handling, pilot plant automation, process control and simulation software. Students gain experience and knowledge that they can readily apply as future industrial employees.

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Dr. Alan Anderson, instructor and research scientist II, Department of Materials and Metallurgical Engineering, and **Dr. John Weiss**, associate professor, Department of Mathematics and Computer Science, received \$75,000 from the National Science Foundation for the project, "Applications of Artificial Intelligence to Enhance Student Learning of Metallography."

Mr. William Arbegast, director, Advanced Materials Processing and Joining Laboratory, received \$4,115 from United Defense for the project, "Friction Stir Welding Demonstration on 1/4" 6061 Plate." **Mr. Arbegast** also received \$30,000 from The Boeing Company for the project, "Fabrication of Cyclic Test Panels."

Dr. Sookie Bang, Professor, Department of Chemistry and Chemical Engineering, and **Dr. Venkataswamy Ramakrishnan**, Distinguished Professor Emeritus, Department of Civil and Environmental Engineering, received \$65,486 in additional funding from the National Science Foundation for the project, "Performance of Microbiologically Enhanced Concrete Structural Elements."

Dr. Gale Bishop, director, Museum of Geology, received \$80,554 from the Standing Rock Sioux Tribe (Prime: United States Department of Interior) for the project, "Evaluation of the Paleontological Resource of Standing Rock Sioux Nation."

Dr. William Capehart, associate professor, Institute of Atmospheric Sciences, received \$75,000 from the National Science Foundation for the project, "The Role of the Continental Wetland Systems in Regional Climate: A Coupled Ecological and Climate Modeling Approach."

Dr. William Cross, instructor and research scientist III, Department of Materials and Metallurgical Engineering, **Dr. Chris Jenkins**, professor and chair, Department of Mechanical Engineering, **Dr. Jon Kellar**, professor and chair, Department of Materials and Metallurgical Engineering, and **Dr. Umesh Korde**, associate professor, Department of Mechanical Engineering, received \$400,000 from the National Science Foundation for the project, "Acquisition of Instrumentation for Advanced Materials Characterization." **Dr. Jenkins** received \$40,000 from NASA for the project, "Computational Modeling and Test Validation of Solar Sail Membranes."

Dr. Andrew Detwiler, chair and professor, and **Dr. John Helsdon**, professor, Department of Atmospheric Sciences, received \$137,012 in additional funds from the National Science Foundation for the project, "Further Analysis and Modeling Studies of Severe Thunderstorm Electrification and Precipitation Study (STEPS) Cases." **Dr. Helsdon** also received \$132,800 in additional funding from the National Science Foundation for the project, "Numerical Studies of Thunderstorm Electrification, Maxwell Currents, and Lightning," and he received \$100,000 from NASA for the project, "3D Modeling Studies of Lightning-Produced Nitric

Oxide with an Explicit Lightning/Electrification Model."

Dr. Edward Duke, Manager of Analytical Services, Engineering and Mining Experiment Station, and Professor, Department of Geology and Geological Engineering, received \$156,500 in additional funding from NASA for the project, "South Dakota Space Grant College and Fellowship Program." **Dr. Duke** and **Dr. Colin Paterson**, professor, Department of Geology and Geological Engineering, received \$4,161 in additional funds from the National Science Foundation for the project, "US-Namibia Cooperative Research: Potential of Hyperspectral Remote Sensing for Geological Mapping and Resource Evaluation in Arid Regions When Used in the Damaran Terrain." **Dr. Duke** received \$16,465 in additional funds from Oglala Lakota College (Prime: National Science Foundation) for the project, "Technical Support for OLC's Environmental and Remote Sensing Lab."

Dr. Sherry Farwell, former dean, Graduate Education and Research, and senior advisor to the president for research and development, and **Dr. William Capehart**, associate professor, Institute of Atmospheric Sciences, received \$16,743 in additional funding from South Dakota State University (Prime: National Science Foundation) for the project, "Modeling Climate-Wetland Interactions in the Northern Plains."

Dr. Patrick Gilcrease, assistant professor, Department of Chemistry and Chemical Engineering, received \$110,000 from the Great Plains Education Foundation, Inc. for the project, "Development of the Biochemical Engineering Laboratory at the South Dakota School of Mines and Technology."

Ms. Carrie Herbel, collections manager, instructor, and preparatory, Museum of Geology, received \$61,500 from the United States Department of Interior for the project, "Support filed work, lab preparation and curation of paleontological material collected from the Conata Basin Excavation Site (Big Pig Dig)." **Ms. Herbel** also received \$24,714 in additional funding from the United States Department of Interior for the project, "Documentation of Significant Paleontological Localities within the Poleslide Member, Brule Formation, Badlands National Park."

Dr. Mark Hjelmfelt, professor, Institute of Atmospheric Sciences, received \$117,600 in additional funds from the National Science Foundation for the project, "Collaborative Research: Investigations of Non-Classic Lake-Effect Boundary Layer Processes."

Dr. Stanley Howard, professor, Department of Materials and Metallurgical Engineering, and **Mr. William Arbegast** received \$50,000 from the United States Department of Energy for the project, "Friction Stir Joining and Processing of Advanced Materials Including AL-MMCs."

Dr. Jon Kellar, chair and professor, **Dr. Lidvin Kjerengtroen**, professor, Department of Mechanical Engineering, and **Dr. William Cross** received \$150,000



from the United States Department of Energy for the project, "Interphase Analysis and Control in Fiber Reinforced Thermoplastic Composites."

Dr. Scott Kenner, professor and chair, Department of Civil and Environmental Engineering, has received \$35,000 from the United States Environmental Protection Agency for the project, "Cheyenne River Physical Habitat Assessment." Kenner also received \$35,000 from the United States Environmental Protection Agency for the project, "Flow Monitoring and Modeling of Belle Fourche Irrigation System."

Dr. Carter Kerk, associate professor, Industrial Engineering program, received \$25,000 from Salish Kootenai College (Prime: National Science Foundation) for the project, "The Louis Stokes All Nations Alliance for Minority Participation."

Dr. Charles Kliche, professor, and **Dr. Zbigniew Hladysz**, professor, Mining Engineering and Management Program, received \$54,487 from the United States Department of Labor - Mine Safety and Health Administration for the project, "Mine Health and Safety Training."

Dr. Alvis Lisenbee, professor, Department of Geology



and Geological Engineering, received \$8,000 from the West Dakota Water Development District for each of the following projects, "Preliminary Aquifer Susceptibility Study of the Pactola Dam Quadrangle, South Dakota;"

"Vulnerability of the Madison Aquifer in the Spring Creek, Rapid Creek, and Box Elder Creek Drainages;" and "Susceptibility of the Minnelusa Aquifer in Rapid City West Quadrangle." **Dr. Lisenbee** also received \$4,479 from the West Dakota Water Development District for the project, "Determination of Historic Ground Water Pollution Problems, Spring Creek, Rapid Creek and Box Elder Creek Drainages."

Mr. John Lofberg, instructor, Department of Mathematics and Computer Science, **Dr. David Dixon**, professor, Department of Chemistry and Chemical Engineering, and **Dr. Arden Davis**, Chair and Mickelson Professor, Geology and Geological Engineering Department, received \$35,826 from the National Science Foundation for the project, "Arsenic Removal from Drinking Water."

Dr. James Martin, curator of vertebrate paleontology and professor, Department of Geology and Geological Engineering, received \$2,500 from the United States Department of Interior for the project, "Fossil Lake Field School Cooperative Project."

Dr. Henry Mott, professor, Department of Civil and Environmental Engineering, received \$11,417 from the Green Valley Sanitary District for the project, "Ground Water Quality Reconnaissance - 2004: Green Valley Estates Sanitary District, Pennington County, SD."



Dr. James Munro, professor, Department of Chemistry and Chemical Engineering, received \$1,500 from Rapid City Economic Development for the project, "Dried Honey: A Preliminary

Investigation."

Dr. Colin Paterson, professor, Geology and Geological Engineering Department, received \$26,053 in additional funds from Black Hills State University (Prime: National Science Foundation) for the project, "A Black Hills Science Teaching Project to Prepare K-8 Teachers for the New Millennium."

Dr. Manuel Penaloza, professor, Department of Mathematics and Computer Science, received \$39,103 from Innovative Systems for the project, "Implementation of a Nortel TGMU Software Application."

Dr. Jan Puszynski, dean, College of Materials Science and Engineering, and **Dr. Jacek**



Swiatkiewicz, instructor and research scientist II, Department of Chemistry and Chemical Engineering Department, received \$110,000 in additional funding for the project, "Combustion Synthesis of Nanocomposite Materials." **Dr. Puszynski**, **Dr. Arden Davis**, and **Dr. David Dixon**

received \$40,000 from the South Dakota Department of Environment and Natural Resources (Prime: United States Environmental Protection Agency) for the project, "Demonstration Project for Arsenic Removal from Drinking Water at Keystone, South Dakota."

Dr. Jan Puszynski, dean, College of Materials Science and Engineering, **Dr. William Arbogast**, director, Advanced Materials Processing and Joining Laboratory, **Mr. Casey Allen**, research scientist II, Advanced Materials Processing and Joining Laboratory, **Dr. James Sears**, research scientist IV, Additive Manufacturing Laboratory, **Dr. Fernand Marquis**, professor, Department of Materials and Metallurgical Engineering, **Dr. Sherry Farwell**, former dean, Graduate Education and Research, **Dr. Teresa Corbin**, research scientist II, Graduate Education and Sponsored Programs, **Dr. David Dixon**, professor, Department of Chemistry and Chemical Engineering, **Dr. Keith Whites**, professor and Steven P. Miller, chair, Department of Electrical and Computer Engineering, **Dr. Robb Winter**, professor and chair, Department of Chemistry and Chemical Engineering, **Dr. Dan Dolan**, professor, Department of Mechanical Engineering, **Dr. David Boyles**, professor, Department of Chemistry and Chemical Engineering, **Dr. Karim Muci**, associate professor, Department of Mechanical Engineering, **Dr. Michael Langerman**, professor, Department of Mechanical Engineering, **Dr. Lidvin Kjerengtroen**, professor, Department of Mechanical Engineering, **Dr. Gregory Buck**, associate professor, Department of Mechanical Engineering, and **Ms. Julie Smoragiewicz**, vice president for University Relations, received \$6,150,000 in additional funding for the project, "Advanced Materials and Processes for Future Combat Systems."

Dr. James Sears, research scientist IV, Additive Manufacturing Laboratory, received \$200,000 from Carpenter Powder Products (Prime: United States Department of Energy) for the project, "Development of Functionally Graded Materials for Manufacturing Tools and Dies and Industrial Processing Equipment."

Dr. Glen Stone, professor, Department of Materials and Metallurgical Engineering, and Arbegast received \$50,000 from the United States Department of Energy for the project, "Advanced Materials for Heavy Duty Brake Systems."

Dr. Kerri Vierling, former associate professor, Department of Chemistry and Chemical Engineering, **Dr. Andrea Surovek**, assistant professor, Department of Civil and Environmental Engineering, and **Dr. Jennifer Karlin**, assistant professor, Industrial Engineering Program, received \$200,000 in additional funding from the National Science Foundation for the project, "CAREER: A Keystone Species Approach to Determining Post-fire Successional Influence on Cavity user Communities in the Black Hills, South Dakota." The funding will be used to create a women's mentoring program at South Dakota Tech.

Dr. Sherry Farwell, former dean, Graduate Education and Research, **Dr. Lee Vierling**, former associate professor, Atmospheric Sciences Department, and **Dr. Pat Zimmerman**, director, Institute of Atmospheric Sciences, received \$42,909 in additional funding from South Dakota State University (Prime: National Science Foundation) for the project, "Quantification and scaling-up of the coupled biogeochemical cycles of carbon and water in grassland ecosystems of South Dakota: Synthesis of flux tower measurements, modeling, GIS and remote sensing."

Dr. Lee Vierling, former associate professor, Atmospheric Sciences Department, **Dr. William Capehart**, associate professor, Institute of Atmospheric Sciences, and **Dr. Patrick Zimmerman**, director, Institute of Atmospheric Sciences, received \$512,100 in additional funding from NASA for the project, "The Use of Remote Sensing for Monitoring, Prediction, and Management of Hydrologic, Agricultural, and Ecological Processes in the Northern Great Plains."

Dr. Karen Whitehead, Vice President for Academic Affairs, received \$147,016 from the South Dakota Department of Education for the project, "Summer Math Institutes." **Dr. Whitehead** also received \$5,130 in additional funding from the United States Department of Education for the project, "SD Teacher Quality Enhancement Grant - Train the Trainer."

Dr. Keith Whites, Professor/Steven P. Miller Chair Electrical and Computer Engineering Department,

Dr. Neil Chamberlain, former professor, and **Dr. Thomas Montoya**, assistant professor, Department of Electrical and Computer Engineering, received \$6,000 in additional fund from the National Science Foundation for the project, "Equipment Acquisition to Establish an Applied Electromagnetics and Communications Laboratory-Research Experience for Undergraduates (REU)."

Dr. Robb Winter, Chair/Professor Chemistry and Chemical Engineering Department, received \$109,491 in additional funds from the National Science Foundation for the project, "SDSM&T-MUS&T REU Site Collaboration." **Dr. Winter** also received \$25,000 in additional funds from the Camille and Henry Dreyfus Foundation for the project, "The Interphase Chemistry and Nanomechanical Properties of Polymeric Composites."

Dr. Patrick Zimmerman, director, Institute of Atmospheric Sciences, **Dr. William Capehart**, associate professor, Institute

of Atmospheric Sciences, and **Dr. Maribeth Price**, associate professor, Institute of Atmospheric Sciences, received \$225,000 from Montana State University (Prime: United States Department of Energy) for the project, "The Northern Rockies and Great Plains Regional Carbon Sequestration Partnership."



Memorials

Hans Gukeisen (1972-2003)

To honor a former Tech student who was killed in military action in Iraq, the Hans Gukeisen Memorial SAE Fund has been established by Charles and Lyla Gukeisen of Yankton to benefit student vehicle teams at South Dakota Tech. Charles is a 1956 graduate of South Dakota Tech and a cousin to Hans Gukeisen's father.

Hans Gukeisen, 31, was the co-pilot of a Blackhawk



medical evacuation helicopter that went down in Iraq on May 9, 2003. Military officials said Gukeisen's aircraft was one of two answering a call to pick up a wounded Iraqi child.

The Gukeisen fund will support Tech's Society of Automotive Engineers projects, with first preference to the Mini-Indy team. The donors' intent is to encourage more students to participate and enjoy the competition the vehicle teams provide. Hans Gukeisen was interested in racing and built a racecar of his own.

South Dakota Tech students design and build several SAE projects every year. In addition to the Mini-Indy, students compete with a Mini-Baja and with a remote-controlled airplane against students from engineering programs around the world. Tech uses the projects to teach team-building, technical, social and other skills that are critical for student success in college and after graduation.

Gukeisen was raised in Rapid City and Lead and graduated from Lead High School in 1989. He enlisted in the U. S. Army in the fall of 1989, and served as a scout for the 3rd Armored Division and drove a Bradley Fighting vehicle during Operation Desert Storm.

After an honorable discharge, Hans returned to Lead and remained active in the military, serving with the 842nd National Guard Reserves based out of Spearfish while he attended South Dakota Tech from January 1992 through May 1993. He re-enlisted in the U.S. Army to pursue a career flying helicopters, and he spent two years with the 1st Armored Division in Germany. He attended Warrant Officer School and then Flight Training School, earning his helicopter wings at Fort Rucker, Ala. Gukeisen was a member of the 571st Medevac unit assigned to the 3rd Armored Division, Fort Carson, Colo., when he was called to duty in Operation Iraqi Freedom.



Welcome:

- **Megan L. Cherry**, temporary Exempt, Assistant Collection Manager/Lead Preparator, Museum of Geology (9/15/04)
- **Dr. Gautam Pillay**, Faculty, Vice President for Research and Professor of Chemical Engineering, Graduate Education and Sponsored Programs (9/15/04)
- **Josh A. Wilkinson**, CSA, Devereaux Library, Library Technician (9/15/04)
- **Carol Sturm, Exempt**, Assistant to the President, Office of the President (9/13/04)
- **Angela J. Mattoon**, CSA, Senior Claims Clerk, Business and Administration-Student Accounts and Cashiering Services (9/6/04)
- **Sharon Kirkpatrick-Sanchez**, Faculty, Instructor, Social Sciences (8/30/04)
- **Dale N. Skillman**, Faculty, Assistant Professor, Mechanical Engineering (8/23/04)
- **Dr. Pat A. Beu**, Exempt, Director of Retention and Testing, Academic and Enrollment Services (8/23/04)
- **Michael S. Larsen**, Exempt, Assistant Volleyball and Track Coach, Intercollegiate Athletics (8/16/04)
- **Karen E. Powell**, Exempt, Assistant Women's Basketball Coach, Intercollegiate Athletics (8/16/04)
- **Dr. Karen S. Braman**, Faculty, Assistant Professor, Mathematics and Computer Science (8/15/04)
- **Dr. John P. Bruni**, Faculty, Assistant Professor, Humanities (8/15/04)
- **Dr. Li Chen**, Faculty, Assistant Professor, Electrical and Computer Engineering (8/15/04)
- **Dr. R. Travis Kowalski**, Faculty, Assistant Professor, Mathematics and Computer Science (8/15/04)
- **Dr. Mahour Mellat Parast**, Faculty, Assistant Professor, Industrial Engineering (8/15/04)
- **Bret R. Swanson**, Faculty, Instructor, Humanities (8/15/04)
- **Dr. Richard A. Talley**, Faculty, Associate Professor, Social Sciences (8/15/04)
- **Dr. Nian Zhang**, Faculty, Assistant Professor, Electrical and Computer Engineering (8/15/04)
- **Steven C. LaMarine**, Exempt, Director of Marketing, University and Public Relations (8/9/04)
- **Lenn E. Naughton**, CSA, Secretary, Surbeck Center (8/2/04)
- **Stephanie Lindsley**, CSA, Program Assistant II, Surbeck Center (8/2/04)
- **S.N. Shashikanth**, Exempt, Director Mining Engineering and Management (8/1/04)
- **Wesley G. Roth**, Exempt, Connelly Hall Director, Residence Life (8/1/04)
- **Naomi J. Fossen**, Exempt, Palmerton Hall Director, Residence Life (8/1/04)
- **Sharon F. Dominicak**, CSA, Senior Secretary, Institute for Multi-Scale Materials (7/19/04)
- **Jacqueline R. Anderson**, CSA, Accountant, Business and Administration-Administrative Services (7/12/04)
- **Zhengpeng Li**, temporary Exempt, Research Scientist I, Institute of Atmospheric Sciences (6/28/04)
- **Jennifer L. Bauer**, CSA, Bookstore Buyer, University Bookstore (6/14/04)
- **Xianzhi (Amanda) Song**, Exempt, Chemical Equipment and Instrumentation Specialist, Chemistry and Chemical Engineering (6/1/04)
- **Michelle M. Gilbert**, CSA, Secretary, Academic and Enrollment Services-Admissions (5/10/04)
- **Deanna M. Bies**, CSA, Secretary, Information Technology Services (5/4/04)

- **Dr. Teresa S. Corbin**, Exempt, Research Scientist II, Graduate Education and Sponsored Programs (4/14/04)
- **Pamela J. Cox**, CSA, Secretary, Institute of Atmospheric Sciences (4/12/04)
- **Jack A. Rice**, Exempt, Golf Coach, Intercollegiate Athletics (4/1/04)
- **Barbara A. Hansen**, Exempt, Recruitment Counselor, Mining Engineering and Management Program (4/1/04)

Change:

- **Cassie Schweigerdt**, Senior Accountant, Institute for Multi-Scale Materials (6/7/04)

Farewell:

- **Dusti Swan**, temporary CSA, Graphic Designer/Marketing Specialist, University and Public Relations (10/14/04)
- **Peggy D. Fleck**, CSA, Secretary, Student Activities and Leadership Center (9/30/04)
- **Alicia L. Soucy**, Exempt, Assistant to the President, Office of the President (8/20/04)
- **Dr. Kyeongsik Woo**, Exempt, Visiting Research Scientist II, Mechanical Engineering (8/19/04)
- **Zhengpeng Li**, temporary Exempt, Research Scientist I, Institute of Atmospheric Sciences (8/18/04)
- **Dr. Gregg T. Stubbendieck**, Assistant Professor, Mathematics and Computer Science (7/14/04)
- **Dr. Sherry O. Farwell**, Exempt, Graduate Education and Sponsored Programs (6/30/04)
- **Gary N. Johnson**, Exempt, Institute of Atmospheric Sciences (6/30/04)
- **Leonard C. Colombe**, Exempt, Academic and Enrollment Services (6/30/04)
- **Marilyn Haskell**, CSA, Librarian, Devereaux Library (6/15/04)
- **Dr. Grant N. Merrill**, Faculty, Assistant Professor, Chemistry and Chemical Engineering (6/15/04)
- **Dr. Brady M. Baker**, Faculty, Assistant Professor, Institute of Atmospheric Sciences (5/31/04)
- **Derek D. Gackle**, Exempt, Hall Director/Assistant Director, Residence Life and Assistant Football Coach, Athletics (5/31/04)
- **Guy Gregory**, CSA, Library Technician, Devereaux Library (5/31/04)
- **Daniel D. Nebelsick**, Exempt, Hall Director, Residence Life (5/31/04)
- **Amy L. Schiltz**, CSA, Secretary, Academic and Enrollment Services (5/31/04)
- **Lilianne S. Wood**, Exempt, Assistant Coordinator for Education, Children's Science Center (5/22/04)
- **Dr. Jonathan I. Bloch**, Faculty, Haslem Postdoc Paleontology Fellow/Assistant Professor (5/19/04)
- **Dr. Dowell Caselli-Smith**, Faculty, Associate Professor, Social Sciences (5/19/04)
- **Christy J. Heacock**, Faculty, Instructor, Social Sciences (5/19/04)
- **Timothy A. Jacobson**, Faculty, Instructor, Mathematics and Computer Science (5/19/04)
- **Rebecca P. Lust**, Faculty, Instructor, Social Sciences (5/19/04)
- **Dr. Bradford A. Morgan**, Faculty, Professor, Humanities (5/19/04)
- **Swamy Dhoss Ponpandi**, Faculty, Instructor, Electrical and Computer Engineering (5/19/04)
- **Elaine E. Baker**, Exempt, Assistant Women's Basketball Coach, Athletics (5/15/04)



Calendar of Events

Visit the on line calendar for details
www.hpcnet.org/sdmtcalendar
 For details about K-12 events,
 visit the K-12 calendar:
www.hpcnet.org/SDTechK-12

December 7

Parade of Trees and Open House – Surbeck Center Ballroom
 President's Holiday Dinner – 5:00 PM
 Children's Holiday Party – 6:00 PM – Surbeck Center Ballroom

December 7-15

Hanukkah

December 11

Christmas Concert – Concert Choir/Master Chorale – Our Lady of Perpetual Help Cathedral – 8:00 PM

December 13-17

Final Exams

December 18

Graduation - Rushmore Plaza Civic Center Theatre – 10:00 AM

December 20-21

Contingency Days

December 22

Semester Break begins

December 25

Christmas Day

December 26-Jan 1

Kwanzaa

January 1

New Year's Day

January 10

Registration and Orientation

Residence Halls open for Spring Semester

January 11-13

Payment Days

January 17

Martin Luther King Birthday – No Classes

February is Black History Month

February 11-13

Mathematics Competition in Modeling – McClaury Bldg

February 11-12

AISES National Conference

– Albuquerque, NM

February 14

Valentine's Day

February 17

Matters of the Heart Wellness Fair – 10:00 AM-3:00 PM – Surbeck Center Ballroom

February 21

President's Day – No Classes

February 22-25

Engineers Week

E-Week Girls

March is Women's History Month and National Nutrition Month

March 5-12

Spring Break – No Classes

March 13-19

Greek Week

March 17

St. Patrick's Day

March 28

Easter Holiday – No Classes

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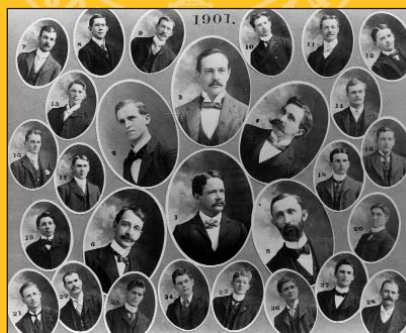
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Tech Trivia

Did you know that...

- Two students graduated from the university in 1901? They were the first graduates since 1891. This photo shows the entire 1901 student body and faculty.



- Connolly Hall became the first permanent student residence on campus when it was built in 1947? Tech opened a new residence hall, Howard Peterson Hall, this fall. Dr. Peterson (GeolE '50) was, from the 1960s into the 1990s, a personal friend of most Tech students. He retired as dean of students in 1992. Peterson continues to mentor students as an advisor, as a member of several university boards and as chairman-emeritus of the SDSM&T Foundation Board of Directors.

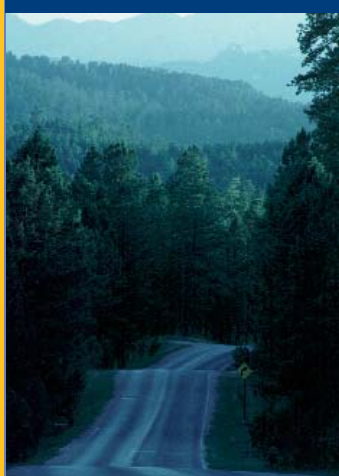


- Students constructed the first "M" on M-Hill in Rapid City in 1912? In the 92 years since, M-Hill has become a focal point for campus traditions and a Rapid City landmark.



- The university held its second Alumni Reunion in 1955? The next all-school, five-year reunion is scheduled for July 6 to July 10, 2005.

7:40 a.m. Rush Hour



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Sam Martens

Daktronics Software Design Engineer
and 1994 graduate of SDSM&T



Projects Sam has been involved with include:



The 2000 Olympic Games in Sydney, Australia.

The 2002 Olympic Games in Salt Lake City, Utah.



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