

The next step...

If hands-on experience, collaboration with professors, undergraduate research projects, and faculty and staff who know their students by name interests you, then we are interested in you.

We encourage you to call and meet with an admission counselor who can help you see how TU accommodates the interests and needs of its students. A visit to the campus (including impromptu conversations with students and faculty) answers a lot of questions, and you can see for yourself that what we say is true. Many of our visitors leave campus knowing that The University of Tulsa is the right place for them.

We also invite you to explore our Web site at www.utulsa.edu, which includes sections on majors, student life, financial aid and the application process.

MISSION OF THE UNIVERSITY OF TULSA

The University of Tulsa is a private, independent, doctoral-degree-granting institution whose mission reflects these core values: excellence in scholarship, dedication to free inquiry, integrity of character, and commitment to humanity.

The University achieves its mission by educating men and women of diverse backgrounds and cultures to become literate in the sciences, humanities, and arts; think critically, and write and speak clearly; succeed in their professions and careers; behave ethically in all aspects of their lives; welcome the responsibility of citizenship and service in a changing world; and acquire the skills and appetite for lifelong learning.

The University of Tulsa does not discriminate on the basis of personal status or group characteristics including but not limited to the classes protected under federal and state law in its programs, services, aids, or benefits. Inquiries regarding implementation of this policy may be addressed to the Office of Human Resources, 800 South Tucker Drive, Tulsa, Oklahoma 74104, (918) 631-2616. Requests for accommodation of disabilities may be addressed to the University's 504 Coordinator, Dr. Jane Corso, (918) 631-2315. To ensure availability of an interpreter, five to seven days notice is needed; 48 hours is recommended for all other accommodations. TU#8286



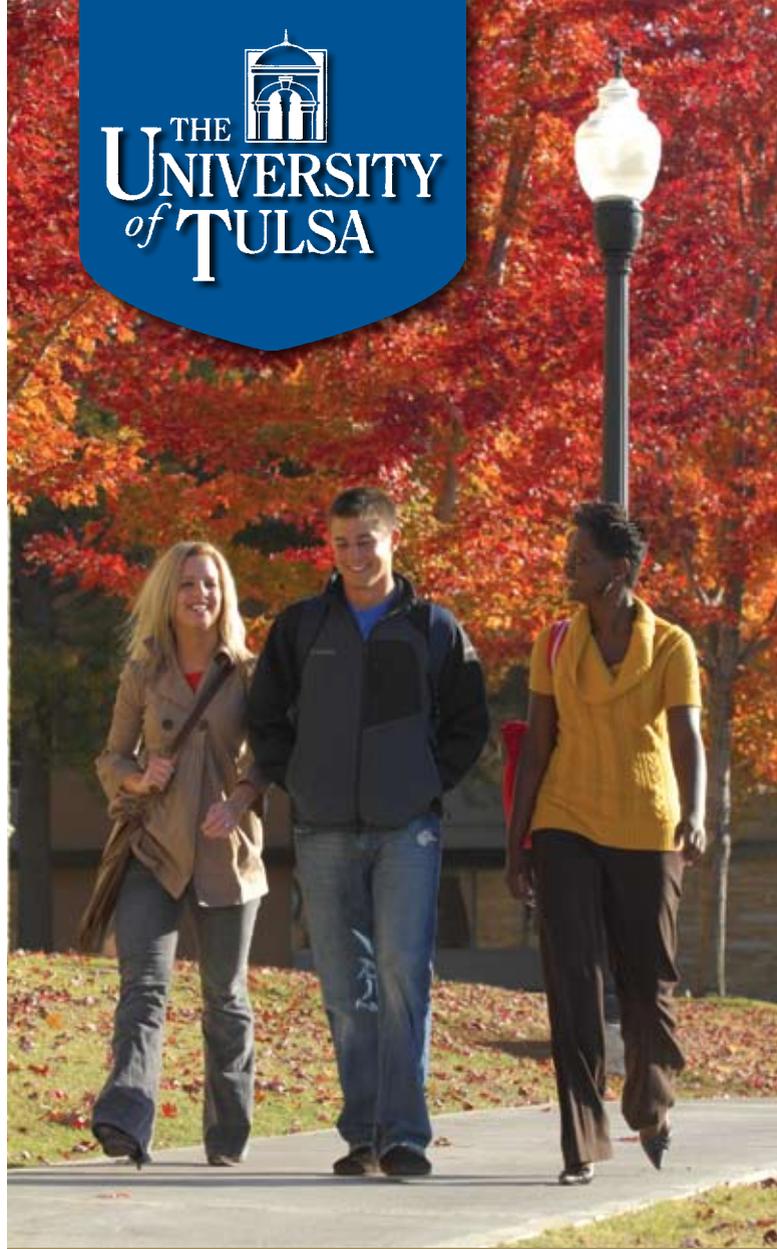
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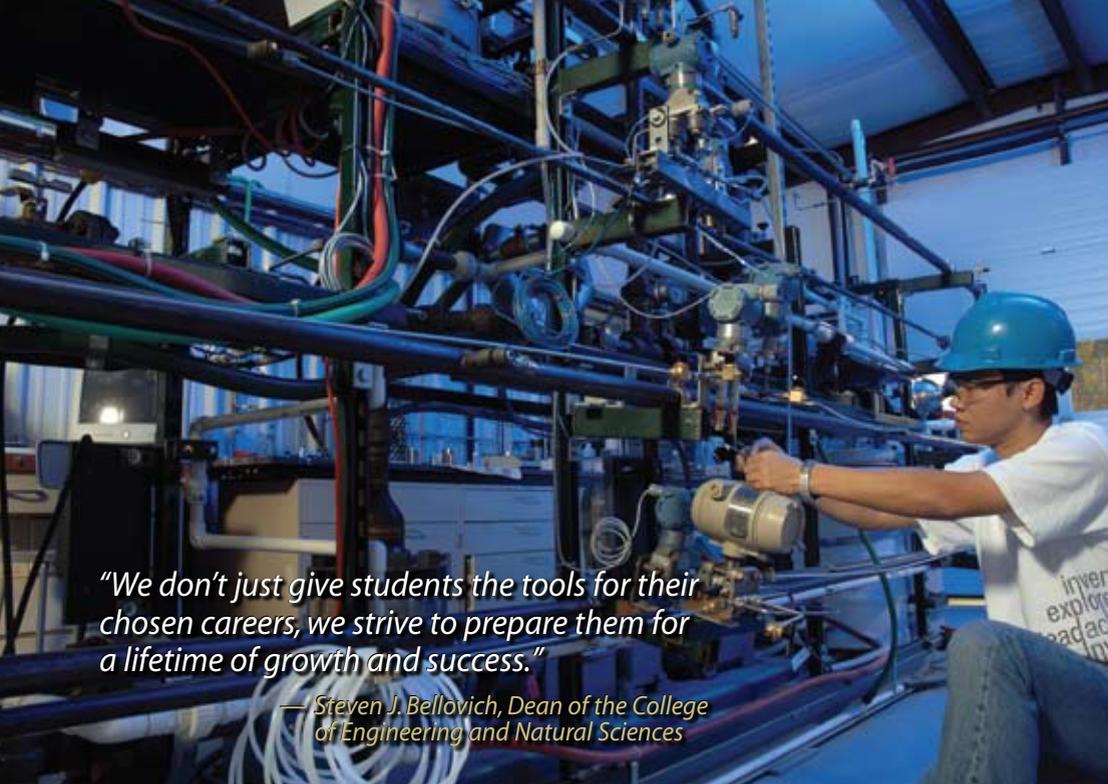
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THE
UNIVERSITY
of TULSA



COLLEGE OF ENGINEERING AND NATURAL SCIENCES





"We don't just give students the tools for their chosen careers, we strive to prepare them for a lifetime of growth and success."

— Steven J. Bellovich, Dean of the College of Engineering and Natural Sciences

**Grow.
Prepare.
Succeed.**

The University of Tulsa College of Engineering and Natural Sciences

Many schools focus so much on professional training that they forget about the rest of the picture. *We're different.* The University of Tulsa College of Engineering and Natural Sciences provides a well-rounded educational experience.

What's the TU difference?

It's the confidence you get from hands-on experiences.

It's the competitive edge you gain by collaborating with professors on innovative research.

It's the insight you develop from a rich core curriculum.

It's the growth you experience through the personal attention students enjoy at TU.

The University of Tulsa offers a high-quality education with hands-on opportunities that will pave the way for your success.



TU: Large enough to provide opportunities for success. Small enough to provide personal attention.

Reasons to choose the TU College of Engineering and Natural Sciences

VALUE The University of Tulsa College of Engineering and Natural Sciences offers an outstanding education. TU students work closely with professors, have extensive research and publishing opportunities, and have access to advanced equipment. Located in Tulsa, Oklahoma, TU features personal attention, interactive classes and a safe campus where faculty and staff know students by name.

CHOICE The college has programs in applied mathematics, biochemistry, biogeosciences, biology, chemical engineering, chemistry, computer science, electrical engineering, engineering physics, geosciences, information systems technology, mathematics, mechanical engineering, petroleum engineering, and physics. Minors are available in computer science, computational sciences, mathematics, physics and other areas depending on the chosen major. The college also offers certificate programs in computer science, information security and product innovation and development.

QUALITY The University of Tulsa is a small private university with a national reputation. TU is currently ranked 91st among national doctoral universities in *U.S. News & World Report's* 2008 edition of *America's Best Colleges*.



All of the college's degree programs are fully accredited by the North Central Association of Colleges and Schools. The engineering degree programs also are accredited by the Accreditation Board for Engineering and Technology (ABET), the chemistry program is approved by the American Chemical Society, and the computer science program is accredited by the Computing Accreditation Commission of ABET.

FACULTY INVOLVEMENT TU College of Engineering and Natural Sciences professors — not teaching assistants — teach undergraduate courses. Strong working relationships between professors and students are at the core of TU's educational approach, and individual attention is consistently among the top advantages cited by our students. TU's low student-to-faculty ratio of 10-to-1 and average class size of 19 mean greater opportunity for one-on-one attention.

RESEARCH OPPORTUNITIES Research is an integral component of education. TU undergraduates present their studies at national conferences, and many have their work published in academic journals. Our students regularly conduct research as part of a senior project. The Tulsa Undergraduate Research Challenge emphasizes scholarship, community service and independent research under the guidance of a faculty mentor. TU's Chemistry or Geosciences Summer Undergraduate Research





Programs allow students to work under the supervision of a faculty mentor in the summer. Average yearly research funding exceeds \$100,000 per faculty member.

CONNECTIONS The TU College of Engineering and Natural Sciences offers more than an excellent education. We also provide students with personal links to professionals through the involvement of key industry advisory boards and corporate partnerships — connections that often lead to internships, summer jobs and employment after graduation.

A STUDENT-FRIENDLY CITY Tulsa was selected in 2008 as one of America's best places to live by Relocate-America.com, which ranks the top 100 cities. A city of about 400,000, Tulsa offers a range of cultural, recreational and employment opportunities. Telecommunications, energy, aerospace, health care and transportation are industries with a strong presence in Tulsa. The city has more than 1,000 restaurants and many major shopping venues.

Diversions include professional ballet and opera companies, museums, a zoo and professional hockey and baseball as well as arena football.

DEPTH TU's emphasis on a balanced education is reflected in the Tulsa Curriculum, which is at the core of all undergraduate study. The curriculum develops well-rounded students through exposure to diverse areas of study and emphasizes critical thinking and communication skills.

SUCCESSFUL SCHOLARS From 1995 to 2008, TU undergraduates have won 42 Goldwater scholarships, 8 Truman scholarships, 27 National Science Foundation graduate fellowships, 7 Department of Defense fellowships, 5 Udall scholarships, 6 Fulbright fellowships and 4 British Marshall scholarships.

THE RIGHT SIZE With an enrollment of about 4,200, TU is large enough to provide opportunities for success, but small enough to provide personal attention.





You may also be interested to know...

- TU operates the world's largest research flow loop, which simulates the drilling of a well at any angle.
- TU was among 17 universities chosen for a national student engineering contest to improve existing automobiles for fuel usage to reduce pollution and energy consumption over a period of four years. The TU student team received a \$10,000 grant and a 2005 Chevrolet Equinox that the team modified. The students added a removable fuel cell skid (dubbed the "H-TU-go") to the Equinox, which is now a working hybrid electric vehicle. The H-TU-go provides supplemental power to the vehicle, or becomes a stand-alone source of 120V AC power for use outside the vehicle. Each year student teams participated in a road rally, and at the end of year two, TU finished in the top half.
- TU Geosciences Professor Peter Michael and undergrad Andrew Matzen were among the scientific crew aboard the 185-foot research vessel, *Kilo Moana*. They conducted research in the Pacific Ocean's Lau Basin, a 250-mile stretch of ocean floor that is lined with deep-sea volcanoes and hydrothermal vents. They helped narrow down four possible study sites from which a "bull's eye" site was chosen for future investigations.
- The University of Tulsa and the Oklahoma chapter of The Nature Conservancy opened a \$1.4 million research station in the 38,000-acre Tallgrass Prairie Preserve, a refuge for American bison located about 75 miles north of TU. Students and faculty in chemistry, chemical engineering, geosciences and biological sciences conduct research on the impact of brine spills

and crude-oil contamination on soil and pond ecosystems.

■ TU computer science professors John Hale and Gavin Manes were inspired by *101 Dalmatians* to thwart online piracy. Their software combats copyright infringement on peer-to-peer (P2P) "share" networks by flooding the networks with alternative content that appears authentic. Hale and Manes were awarded U.S. Patent 6,732,180 for their software-based method to prevent illegal music downloads over the Internet.

■ As part of the multiphase dispersion characterization program sponsored by Chevron TU-CoRE (Tulsa University Center of Research Excellence), a new state-of-the-art Dispersion Characterization Rig (DCR) has been acquired. This facility is one of about six such laboratory facilities in the world.

■ NanoJapan combines research in nanotechnology with study abroad in Japan for undergraduate engineering students. The program centers on a 12-week summer session that includes a three-week language and culture orientation followed by research internships with leading Japanese nanotechnology laboratories.

■ TU undergraduate Dan Flanagan had an all expenses paid summer internship at the National Fusion Facility at General Atomics in San Diego, California, where he worked on solving the physics problems associated with thermonuclear fusion research.

■ The TU Hydrate Flow Performance research facility — aimed at preventing ice-like hydrates from plugging oil and gas pipelines — began operations in 2002. Studies are conducted using a \$1.5 million flow loop that is 162 feet long. The oval-shaped loop is on an 80-foot-long steel platform that rests on a 10-foot tall pivot. The seesaw-like arrangement permits continuous rocking to simulate the flow of oil, water and gas.

■ In 2006, 86 percent of TU pre-med students who applied to medical school were accepted, compared to a national average of 49 percent.

■ More than 20 students modified a power wheelchair for a local child with cerebral palsy. In addition to joysticks, controllers and motors, they customized the chair by adding an IRI robotics controller that serves as the main processing unit for the computerized components; created a virtual reality "driving" range by videotaping

the interior of her school; and included infrared sensors around the bottom of the chair that shut it off as a safety precaution.

■ Edmund F. Rybicki, the Harry H. Rogers Professor of Mechanical Engineering and Department Chair at TU, includes among his many accomplishments: having a NASA computer named in his honor and developing the welding sequence for the U.S. Army's M1A1 battle tank hulls and the weld procedure for the U.S. Navy's deepest diving submersible, SEACLIFF.

■ Led by sophomore Maria Holland, the TU chapter of Engineers without Borders has travelled to China twice: In the summer of 2007, the EWB went to Jilin province to set up a wind turbine in a rural village to provide sustainable power; then in 2008, returned to China to develop sustainable dwellings for shepherds. Future plans include a trip to Sierra Leone in December 2008.

■ Chemistry Professor Dale Teeters has been awarded U.S. Patent 6,586,133 for a method of making nanobatteries. The patent co-inventors working with Teeters have been students in either chemical engineering or chemistry at TU. Teeters was also featured on the History Channel's *Modern Marvels*.

■ Biology Professor Charles Brown received a grant of \$856,000 from the National Institutes of Health to study a virus that infects cliff swallows. The research may shed light on the transmission of other viruses that affect humans, such as West Nile.

■ In 2008, the *U.S. News & World Report* ranked TU's petroleum engineering graduate programs fourth best in the nation.

■ Engineering students who have collaborated with TU business students in the annual Governor's Cup have won and placed 2nd and 3rd in the contest. Two of the TU teams currently are launching businesses based on their winning ideas.

■ The National Science Foundation in 2001 named TU one of six pioneer institutions in its "Cyber Corps" program, which trains students to become computer security experts and defend the country against Internet hackers. The university, designated by the National Security Agency as a Center of Excellence in Information Assurance, is one of only 12 institutions that can award five federal certificates in information security.

Student pre-professional organizations

Students can join and serve as officers in numerous pre-professional organizations, including the following: American Chemical Society; American Institute of Chemical Engineers; American Society of Heating, Refrigeration, and Air Conditioning; American Society of Mechanical Engineers; Association for Computing Machinery; Geosciences Club; Institute of Electrical and Electronics Engineers; Society of Women Engineers; Society of Automotive Engineers; Society of Petroleum Engineers; and Society of Physics Students.

Honor societies include Alpha Epsilon Delta (pre-med), Beta Beta Beta (biological science), Eta Kappa Nu (electrical engineering), Iota Sigma Pi (National Honor Society for Women in Chemistry), Kappa Mu Epsilon (mathematics), Sigma Pi Sigma (physics), and Tau Beta Pi (engineering).

Tulsa Undergraduate Research Challenge (TURC)

TURC is an undergraduate program combining scholarship and service. TURC students take advanced courses, conduct research with TU professors, and develop and lead community projects that employ their skills.

Since 1995, 35 TURC students in the college have won the Barry M. Goldwater Scholarship.

Additionally, TURC students have won 18 National Science Foundation Awards, 6 Department of Defense Fellowships, 6 Truman Scholarships and 3 British Marshall Scholarships.

Cyber Corps

Cyber Corps is part of TU's Center for Information Security (CIS), which supports information security education, research, and service activities. The center's goal is to help protect Internet systems from hackers and cyber terrorists. CIS offers five government-endorsed certificates in information security.



Scholarship Pays: The TU Edge

How is it that 42 University of Tulsa students have won national Goldwater scholarships since 1995?

Simple. By combining professors who enjoy working with students on research projects with state-of-the-art technology and motivated undergraduates who have the drive to succeed, TU has a winning formula.

The Goldwater scholarship is considered the premier undergraduate award of its type in mathematics, natural sciences and engineering. It provides up to \$7,500 annually for the junior and senior years.

In 2007, two University of Tulsa students won Goldwaters. They were among 317 winners selected from 1,110 sophomores and juniors who applied for the academic merit scholarships.

Research and community service are key ingredients needed to win these awards.

TURC, the Tulsa Undergraduate Research Challenge, is a nationally recognized program integrating scholarship and service. In 10 years, TURC students have won 71 national scholarships, including Marshall, Truman, Udall and Goldwater awards.

Students in TURC take advanced courses and conduct research with top TU professors, and the students also use their talents and skills to develop and lead community projects. Some students help build houses for Habitat for Humanity, others build Web sites for local nonprofit agencies or tutor in local schools. A recent list of TURC research projects includes a broad spectrum of topics — blood test diagnosis for cancer, integrating engineered nerve tissue into damaged spinal cords, the relationship of chlorination of water and carcinogens, computer forensics and security of SS7 networks, mutations rates in E coli bacteria, and designing sensors to detect chemical warfare agents.

Also available are the Chemistry Summer Undergraduate Research Program (CSURP), Geosciences Summer Undergraduate Research Program (GSURP) and Cyber Corps, a new federally funded program through which TU students are trained to become computer security experts to defend the Internet from attacks by hackers and terrorists.

In CSURP students work under the direct supervision of a faculty mentor for 10 weeks in the summer. The program provides stipends for student researchers and in some cases provides housing and meals. In Cyber

Corps, students conduct research, often in collaboration with federal scientists, as part of a senior project or a master's thesis.

Among TU's winning scholars are 2008 Goldwater Scholar Maria Holland; 2007 graduates Pavel Gershteyn, who received a National Defense Science and Engineering Graduate Fellowship, valued at more than \$90,000; and Adam Leeper, Thomas Loyd and David Robinson, who each received National Science Foundation fellowships, worth \$120,000 each.

Holland, an engineering physics sophomore, plans to earn a doctorate degree in sustainable energy.

Gershteyn, a computer science major, says that he chose the TU graduate program because, "TU is a leader in information security."

Engineering physics major Leeper headed to Stanford University, where he is researching robotics for aerospace applications. Loyd, also an engineering physics graduate, is attending the University of New Mexico and working in its quantum information group.

Robinson, a chemistry major, is continuing his research at Princeton University.





For detailed information about programs, requirements, and course descriptions for all three TU undergraduate colleges, download *The University of Tulsa 2006-2008 Undergraduate Bulletin* (PDF format) from

[www.utulsa.edu/bulletins/majors.](http://www.utulsa.edu/bulletins/majors)

or request a copy from The University of Tulsa Office of Admission, 800 South Tucker Drive, Tulsa, OK 74104, Phone: 918-631-2307, Toll-free: 1-800-331-3050, Fax: 918-631-5003, E-mail: admission@utulsa.edu, Web: www.utulsa.edu

The University of Tulsa College of Engineering and Natural Sciences

Applied Mathematics

Emphases available in Business, Computer Science, Education, Engineering, and Environmental Sciences

Biochemistry

Biogeosciences

Biology*

Chemical Engineering

Concentrations available in Environmental, Materials, Petroleum Refining, and Pre-Medicine

Chemistry*

Computer Science

Electrical Engineering

Engineering Physics

Geosciences (B.S.)*

Options available in Earth and Environmental Science, Environmental Sciences, Geology, and Geophysics.

Minor available in Petroleum Engineering.

Information Systems Technology

Mathematics*

Mechanical Engineering

Petroleum Engineering

Minors available in Chemical Engineering, Environmental Engineering, Geosciences, and Mechanical Engineering

Physics*

Certificate programs

Computer Science

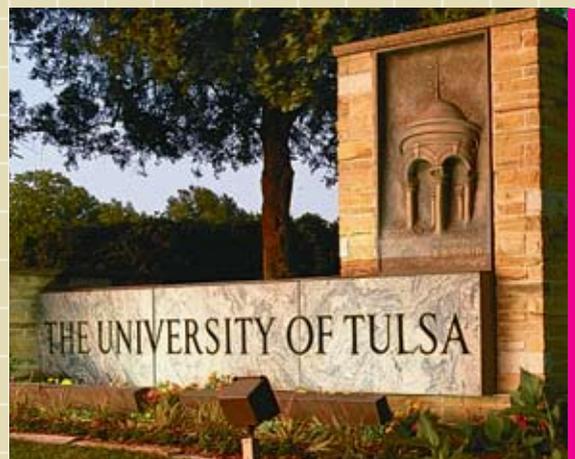
Information Security

Product Innovation & Development

Minors are available in Computer Science, Computational Sciences, Mathematics, and Physics.

A joint bachelors/MBA program is available.

*Teacher certification is available.



Kristina Pyles

Class of 2007 **Major: Computer Science**

Hometown: Jenks, Okla.

Jenks High School

As a middle school student, Kristina Pyles wanted to be a lawyer when she grew up. A TU math and science summer camp for girls changed her mind.

“The great thing about the camp was getting to see classroom theory in action,” she remembers. “That camp exposed me to what you can do with math.”

Pyles declared computer science her major as a freshman. “This college is a good environment for women students,” she says.

Her enthusiasm for the sciences is complemented by a “can do” attitude. When the antenna on her car malfunctioned, Pyles disassembled it and replaced it with one she purchased online. She has shared her attitude with Girl Scouts and high school girls interested in math and science. As cochair of community service for TU’s chapter of the Society of Women Engineers (SWE), Pyles has helped Brownies earn badges in statistics and computers. “We had the girls take apart a computer and put it together again to help them understand how it works,” she says.

SWE hosts weekend retreats for high school girls. With volunteers from various departments in the college, SWE also sponsors a range of workshops including teaching basic car mechanics.

Pyles is also a member of the Tulsa Gaming Society. “We play all kinds of games: video, computer, board and cards, which is my favorite,” she says.

Pyles plans to attend graduate school in international relations. Meanwhile, she’s concentrating on her senior project — the Outreach Game, which is designed to interest elementary, middle and high school students in math and science careers. Pyles has come full circle — from a curious middle schooler discovering her own love of mathematics to a college senior, drawing other students to the field.



Tom Queathem

Class of 2007 **Major: Mechanical Engineering**

Hometown: Manchester, Mo.

St. Louis University High School

Tom Queathem always knew that he wanted to attend a college that offered more than an engineering curriculum. Before selecting The University of Tulsa, he visited the campus of a science-only school.

“Frankly, I wanted to meet students who were artists and poets, not just engineers,” he says. “TU’s Tulsa Curriculum was the perfect balance to my engineering classes, and allowed me to meet non-engineers.”

Along with the solid engineering skills he received in his major studies, Queathem credits the broad-based Tulsa Curriculum with helping him excel during two summer internships at Anheuser-Busch in Atlanta where he worked to improve two production lines.

“I learned good people skills by branching out from my major classes,” he says. “My plant manager told me that he could envision me as a plant manager someday.”

Queathem will be well on the way to upper management. After he graduates, Anheuser-Busch has a job for him as production manager for two high-speed bottling lines, supervising 34 employees.

“I have TU to thank for that,” he says. He also acknowledges the “always accessible, always friendly” faculty at TU as keys in his growth. “From the very first class, it is obvious that they love engineering. Their enthusiasm makes learning a fun process,” he notes.

He also honed his “people” skills through extracurricular activities as president of his residence hall and as president of the Newman Center.

“TU has helped me grow in so many ways,” he says. “My faith life has deepened tremendously. I’ve learned to think more globally and be responsible for the part of the world that I inhabit. I’ve made the best friends of my life from a diverse group of people; and I’ve had extraordinary teachers. I couldn’t have asked for a better college experience. TU is everything I hoped it would be.”



"Our mission is to graduate engineers and scientists who are technically competent, creative, literate, ethically informed and socially aware."

individual approach

A distinguishing characteristic of the academic program in our college is the small student-teacher ratio of seven-to-one. This ensures that all classes are offered as needed and are taught by faculty, not by graduate students. This favorable student-teacher ratio also means that

class sizes are small, that individual student instructional needs are recognized and addressed, and that meaningful research participation with professors becomes an integral component of the overall learning experience.

The University of Tulsa College of Engineering and Natural Sciences

Dean — Steven J. Bellovich
(Ph.D., University of Nebraska)

Senior Associate Dean — James R. Sorem, Jr.
(Ph.D., University of Kansas)

Associate Dean for Academic Affairs — Richard L. Reeder
(Ph.D., University of Arizona)

Faculty Chairs

Biological Science — Estelle Levetin
(Ph.D., University of Rhode Island)

Chemical Engineering — Geoffrey Price
(Ph.D., Rice University)

Chemistry and Biochemistry — Dale C. Teeters
(Ph.D., University of Oklahoma)

Electrical Engineering — Gerald R. Kane
(Ph.D., P.E., Rice University)

Geosciences — J. Bryan Tapp
(Ph.D., University of Oklahoma)

Mathematical & Computer Sciences —
Roger Wainwright
(Ph.D., Iowa State University)

Mechanical Engineering — Edmund F. Rybicki
(Ph.D., P.E., Case Western Reserve University)

Petroleum Engineering — Mohan Kelkar
(Ph.D., University of Pittsburgh)

Physics and Engineering Physics — George P. Miller
(Ph.D., University of Waikato, New Zealand)

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