TEXAS A&M UNIVERSITY - COMMERCE

RESEARCH

Where Research Is More Than a Program...It's a Commitment

Texas A&M University-Commerce has a rich history of preparing education administrators to meet the demands of the state and the nation. But one aspect of the university that has not been publicized as much is the exciting research being carried out by our faculty and students.

With the recent completion of our new science building, which is equipped with state-of-the art instrumentation, we are positioned to be a leading university for research for the northeast Texas region.

In an age of a tightened federal research budget, we are proud to continue to secure extramural funding for our research efforts. The research dollars coming in to the university have been increasing over the years. This is mostly spurred by an increase in interdisciplinary research being carried out in an effort to foster research for the benefit of students at all levels.

The involvement of young people in research is integral if we are to produce the next generation of scientists and leaders.

For example, through an interdisciplinary project involving the departments of computer science, psychology and physics, our scientists are gaining a better insight into artificial intelligence and how computation can impact society.

In an effort to continue in the integration of teaching and research, which has been our strong point, some of our research programs involve not only our own undergraduate and graduate students, but students from neighboring community colleges and high schools.

Through our newly awarded National Science Foundation grant, students from neighboring community colleges are being involved in research at the university. The involvement of young people in research is integral if we are to produce the next generation of scientists and leaders.

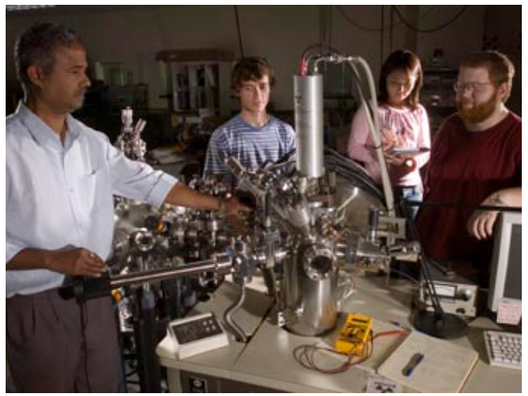
This journal provides only a glimpse of the research efforts being carried out on our campus. The university continues to serve a wide cross section of the population, and the impact of the research has far-reaching benefits. To learn more about other research being carried out at the university, I encourage you to visit www.tamu-commerce.edu/gradschool – or visit our campus whenever the opportunity arises.

Sincerely,

Allan D. Headley, Ph.D.
Dean, Graduate Studies and Research

Table Of Contents

A&M-Commerce encourages undergraduate research



Physics professor Dr. Anil Chourasia (far left) demonstrates how to use the x-ray photo electron spectroscopy (XPS). Such spectroscopy involves the study of the electrons emitted from a material under irradiation with X-rays.

Community college students don't usually have the opportunity to use state-of-the-art scientific equipment or work side by side with graduate students on research projects. But this summer at Texas A&M University-Commerce, 10 students did just that.

> Students were paired with mentors, based on their academic interests, and assigned research projects.

As part of A&M-Commerce's new Research Experience of Undergraduates (REU) program, 10 community college students spent 10-weeks immersing themselves in science: learning to use scientific equipment, how to perform the research, analyze it and to present it to their colleagues.

"My intention was to help two-year colleges in the surrounding area while building our scientific reputation," said chemistry professor Dr. Ben Jang. "These students may have limited experience with research facilities that are available here, and I wanted them to know more about scientific research so that they could make the right career decision for themselves."

Each student received about $6,000, which included a $3,000 stipend, room and board, travel and research supplies. They also received academic credit for their work.

Since most of the student researchers didn't have experience using sophisticated lab equipment, the first couple of weeks were used to familiarize them with the tools they needed to complete their work.

"They started out with training aimed at building research skills," said Dr. Allan Headley, dean of the School of Graduate Studies and Research.

After the initial training, students were paired with mentors, based on their academic interests, and assigned research projects. Their schedules were intensive, with the students working eight or more hours a day, immersed in their research.

"Academically, it's been absolutely fantastic," said Darryl Encino, a junior from Northeast Texas Community College. "It's been really exciting." Encino will transfer to A&M-Commerce in the fall to pursue his bachelor's degree in chemistry and biology.

Undergraduate and graduate science students have access to state-of-the-art equipment like this Olympus Fluoview confocal microscope, which can help them in their research.

Dr. Lance Whaley (left), assistant professor of chemistry, uses the nuclear magnetic resonance (NMR) spectrometer in many of his research endeavors. The NMR spectrometer is useful in determining the structures of molecules.

Echoing Encino's enthusiasm is Shiloh Free, who decided to change her college plans because of the program. "I was planning to go to Lamar University, but I liked this program so much that (chemistry professor) Dr. Starnes recruited me," said Free, who will begin classes at A&M-Commerce this fall. "I loved the project and the group I'm in," she said. Free will become Starnes' undergraduate research assistant, and said she looks forward to continuing research on the project she worked on this summer.

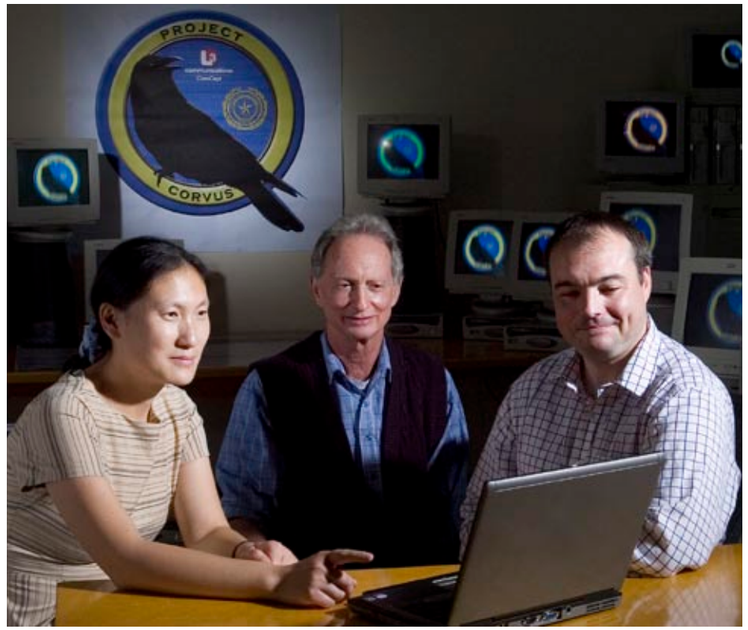
In addition to the research, the students also learned how to present their findings. Each group had to present a progress report to the others, so that by the end of the program they each had five presentations under their belts.

That process proved very helpful when they had to present their findings at a symposium at A&M-Commerce, which was held at the end of the program.

The REU program was made possible by a $191,340 grant from the National Science Foundation. The mentors on this project were Drs. Anil Chourasia, physics; Headley, chemistry; Jang, chemistry; Howard Richards, physics; Stephen Starnes, chemistry; and Whaley, chemistry.

Researchers push limits of artificial intelligence

Curiosity is the driving force behind a groundbreaking research partnership between L-3 Communications Corporation's ComCept Division and Texas A&M University-Commerce. Known as Project Corvus, it seeks to create curiosity in specialized computer networks.



Artificial curiosity pushes the concept of artificial intellegience a step further by not only making a computer "intelligent," but also making it "curious."

Currently, to perform complicated tasks, a computer is still depended upon a user to tell it what tasks need to be accomplished and in what order. The Project Corvus team is working on a way to take the human element out of that equation. "We want to see if we can create a truly curious system that can take on some of the human function," said Dr. Derek Harter, professor of computer science.

Project Corvus researchers are working with computer grids, which allow a single computer user to unite pools of servers, storage systems and networks into a single large system. Instead of having one computer perform complicated tasks or calculations, that computer links to others (when they are idle) and uses the power of multiple systems complete the task. To a user, data file or an application, the system appears to be a single enormous virtual computing system.

Jim Turner, senior staff research engineer at ComCept Division, says the ultimate objective of Project Corvus is "to document research into the feasibility and practicality of creating artificial curiosity in a distributed network cyberinfrastructure."

"A comparison of sorts is Google, which allows people to enter queries and which returns sources of information," says Dr. Linda Morales, computer science professor at A&M-Commerce. "Right now there is no capability by specialized networks to issue queries and gather this kind of information."

"This is groundbreaking research," says Turner, "so we are not sure where the project will lead us. However, if we are successful, it will have applications ranging from health to defense."

"This is the start of a fruitful relationship to push the frontier of technology and science further," says Dr. Allan Headley, dean of Graduate Studies and Research at A&M-Commerce, commenting on the partnership between ComCept and the university.

The A&M-Commerce project team includes Drs. Harter, Shulan Lu, Linda Morales, Sam Saffer and Sung Chuhl Suh, who are assisted in their research by several graduate and undergraduate students.

Professor seeks to understand stereotypes

For the past nine years, Texas A&M-Commerce psychology professor Dr. Raymond Green has been studying gender types, focusing on how people perceive gender and what stereotypical traits assigned to each gender are viewed as positive or negative.

Green has introduced a model referred to as "E3" that suggests there are three mechanisms that guide a person's perception of gender roles: elaboration, encapsulation and evaluation.

With the help of a student worker, Green spent a year collecting data to support his theory. He wanted to find out what kinds of stereotypes people held about types of men and women and how they rated them: positive or negative.

A group of A&M-Commerce students served as the test subjects and were given labels for approximately 70 stereotypes – ranging from businessman to housewife to wimp – and were told to sort them into categories. Then they were to rate each group by how positively they viewed them.

> "We wanted to create a simple picture to explain these things," Green said. "It helped communicate the message nicely."

Green found that gender targets were generally perceived as negative if they violated stereotypes.

The results from this study were mapped out on the computer in a graphic consisting of clusters with the names of the stereotypes inside, rated by positive or negative scores.

"We wanted to create a simple picture to explain these things," Green said. "It helped communicated the message nicely."

Upon completion of the study, Green and colleagues Richard D. Ashmore (Rutgers) and Robert Manzi Jr. (Indiana University of Pennsylvania) published the findings in an article for Social Cognition entitled "The Structure of Gender Type Perception: Testing the Elaboration, Encapsulation and Evaluation Framework."

Green earned his undergraduate degree in psychology from Drew University, and his master's and Ph.D. from Rutgers. He joined the Texas A&M-Commerce faculty in 2000.

Peer Review

PEER-REVIEWED PUBLICATIONS

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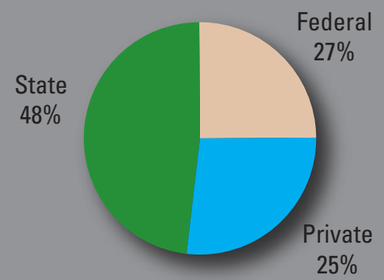
External awards and graduate enrollment

RESEARCH FUNDING AT A&M-COMMERCE CONTINUES TO RISE

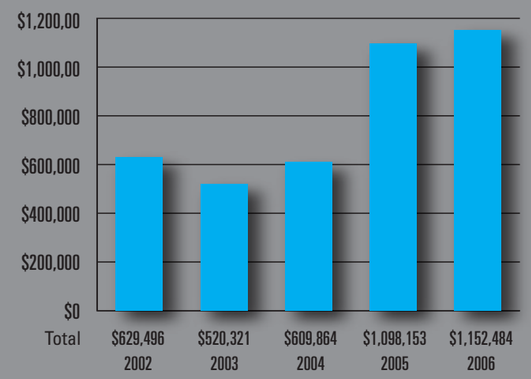
Research expenditures for FY 06 have increased by 90% over the research expenditures for FY 04. Our faculty continue to increase their research activities and the number of proposals that were submitted over the past two years have increased by 105%. There has been a steady increase in State funding for research projects, with Private funding increasing over 101% from FY 05 and a slight decline in Federal research dollars. New interdisciplinary initiatives involving physical sciences, along with computer science and psychology programs, have generated new research dollars.

Our graduate students are integral to the success of our research programs. The current doctoral enrollment is 344 and the master's is 2305. Compared to the enrollment in 2002, the present enrollment represents a 28% increase. In 2005, 43 doctoral degrees and 914 master's degrees were conferred, and our completion rates for our doctoral students are among the highest in Texas.

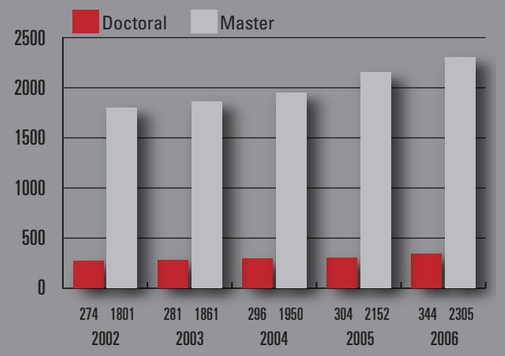
Research Expenitures
State/Private/Federal
Fiscal Year 2006



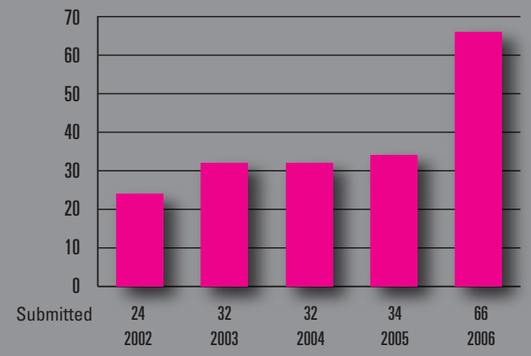
Total Research Expenitures
Five Year Trend
Fiscal Years 2002 - 2006



Doctoral and Masters Enrollment
Five Year Trend
Fiscal Years 2002 - 2006



Number Of Proposals Submitted
Five Year Trend
Fiscal Years 2002 - 2006



Who's Who

ALUMNI SPOTLIGHT

NEW SENSOR TECHNOLOGY PUTS CHEMICAL ANALYSIS IN THE PALM OF YOUR HAND

Dr. Richard Cernosek (B.S. '75, M.S. '76) has worked for the Department of Energy's Sandia National Laboratories in Albuquerque, N.M., for nearly 30 years. He supervises a talented team of scientists and engineers whose work is changing the face of chemical detection and could save many lives in the process.

The team has been working for the past several years on developing sensor components and related technologies that are used in lightweight, low power, portable chemical detection systems. Before this technology evolved, chemical samples were collected in the field and sent to laboratories for analysis.

The new detection systems provide accurate analysis, detecting and identifying a wide range of chemicals within minutes. The device has been tested against chemical warfare agents and can analyze chemical signatures indicating other weapons of mass destruction, namely nuclear and biological. System utilization extends to a variety of peacetime and commercial chemical applications, including environmental remediation and industrial process monitoring.

DE LA GARZA HELPING TO TREAT DRUG ADDICTION

Dr. Richard De La Garza II (B.S. '85) is working to help solve a debilitating problem affecting many Americans today: drug addiction. De La Garza is an associate research professor and lecturer in the Department of Psychiatry and Biobehavioral Sciences and the Integrated Substance Abuse Program at UCLA's David Geffen School of Medicine. His research is funded by the National Institute on Drug Abuse.

De La Garza is co-director for the Stimulant Abuse and Addiction Research Group and his team focuses their efforts on methamphetamine- and cocaine-addicted patients. The A&M-Commerce alumnus is actively testing the safety and effectiveness of novel medications that will help individuals overcome their addiction to stimulants.

In a recent issue of the scientific journal Neuropsychopharmacology, De La Garza and colleagues reported novel findings from an inpatient trial with Bupropion (used as an antidepressant known as Wellbutrin, and as a smoking-cessation medication known as Xyban). The data showed that bupropion treatment reduced the feeling of methamphetamine-induced "high" and "desire" in methamphetamine-addicted patients.

SMITH'S RESEARCH SEEKS TO IMPROVE ENVIRONMENT

Dr. Douglas Smith's (B.S. '97, M.S. '99) research is centered on making a difference in the quality of the country's soil, air and water quality. Smith is a research soil scientist for the National Soil Erosion Research Laboratory for the United States Department of Agriculture, Agricultural Research Service (USDA-ARS) in West Lafayette, Ind.

The bulk of Smith's current research is focused on analyzing the impact of certain fertilizers and chemicals used by farmers on the run-off in streams in ditches.

Much of Smith's research is part of the Conservation Effects Assessment Project (CEAP), which is a national effort to assess the environmental benefits of conservation practices used by farmers participating in USDA conservation programs.

"The part of my job I enjoy the most is working with people from diverse backgrounds like ecologists, farmers and policy makers," Smith said.

A&M-Commerce Promotes All Levels Of Research

Texas A&M-Commerce's state-of-the-art Science Building includes classrooms, offices and research laboratories, as well as the departments of biological and environmental sciences, chemistry and physics.The centerpiece of the building is the 87-seat planetarium, which features a 40-foot tilted dome and a state-of-the-art digital projection system.

A&M-Commerce faculty, students and alumni are working on many exciting research projects, driven by the thrill of discovery and the desire to make a positive impact on the world around them.

With the addition of the new state-of-the-art science building, our faculty and student researchers now have access to facilities that rival those of much larger universities. Being a smaller university has many advantages, including having much more one-on-one interaction between professors and students, creating a nurturing learning environment.

It also encourages more undergraduate involvement in research. At most larger universities, undergraduates don't have the opportunity to use the research equipment—that is reserved strictly for graduate students and faculty. Here our undergraduates have the opportunity to work along side graduate students and their professors for a hands-on learning experience.

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