STEM teachers needed

NOYCE CAPACITY BUILDING PROJECT TO INCREASE TEACHERS

HIGH PERFORMANCE COMPUTING | COMMERCE ORGANICS | ALL IN THE NUMBERS
FEATURES

3 JUST A MATTER OF NUMBERS
4 THE ORGANIC SIDE OF COMMERCE
5 HIGH PERFORMANCE COMPUTING INITIATIVE
6 NOYCE CAPACITY BUILDING PROJECT
7 HONORING A LEGACY
8 LION'S PRIDE BEST ROBOTICS COMPETITION
9 NEW FACULTY IN PHYSICS AND ASTRONOMY
10 INDUSTRIAL ENGINEERING PROGRAM RECEIVES A 6-YEAR REACCRETION

NOTEWORTHY

10 NIKOLAY SIRAKOV

NEWS & RECOGNITION

10 COSEA DEAN RE-ELECTED TO TEXAS SPACE GRANT
10 PHYSICS FACULTY MEMBER NAMED REGENTS PROFESSOR
10 BERTULANI NAMED FELLOW OF AMERICAN PHYSICAL SOCIETY
these aren’t your parents’ numbers. Mathematics in the 21st Century has become a raucous blend of predictive science, algorithm development, and speculative research. The arrival of ubiquitous computing has literally changed the face of what mathematicians and their students do. The Mathematics Department’s traditional strengths include a well-established curriculum and a heritage of faculty who care deeply about students. The faculty research strengths include analysis and geometry, applied mathematics (statistics, image processing), mathematics education, and topology. Last year, the faculty published 23 peer-refereed journal articles and received three grants with a total budget of more than $450,000 from the National Science Foundation, Texas Higher Education Coordinating Board, and other funding agencies. The faculty is active in national, state, and local mathematical societies, serve as editors and referees for mathematical journals, reviewers for mathematical textbooks, and organize and present at national and international conferences. A&M-Commerce mathematics students find enjoyment, incentives, and benefits in the study of mathematics at the university. They join the faculty in departmental academic and social events, work under the direction of nationally and internationally renowned faculty on research projects, and present at mathematical conferences. Directed and sponsored by faculty, the math club organizes various activities to engage students in exploring mathematics. In spring 2012, A&M-Commerce students won second place at the Calculus Bowl Competition of the Texas section of the Mathematical Association of America. The department awarded scholarships in excess of $40,000 last year and offered employment at the Math Skills Center to students. Last year, the Department of Mathematics graduated 17 B.S. and 6 M.S. students. Proportionally, they produce as many or more public school mathematics teachers as any university in Texas. Our students do extremely well on the state teacher certification exam. The success rates are over 95% for both the secondary and middle school programs. Graduates have successfully built careers in industry, government, business, scientific and technological fields, computing and information science, actuarial work, and education. Each year, more than 90% of graduates find employment in their field of study. For example, employers that hired A&M-Commerce mathematics graduates include Texas Instruments, L3, General Dynamics, and several high schools in the northeast Texas region. Some graduates continue pursuing their Ph.D. degrees in mathematics and related areas.
The Organic Side of Commerce!

by Roberta Vassallo

On November 1, 2012, Twin Oaks Blueberry Farm celebrated the opening of the first pecan season. A&M-Commerce purchased Twin Oaks Blueberry Farm in 2009 and started selling products to cover operational costs in 2011 with the idea of providing the local community and surrounding counties with fresh produce. They planned to offer a location for local farmers to sell their products, as well.

Located on Highway 50, approximately five miles outside of Commerce, the farm encompasses 14 acres of land, and it utilizes organic technologies and natural growing practices in the production of fruits and vegetables. The farm includes 108 pecan trees, three small Asian Persimmons, six varieties of blueberries, five pear trees, and three fig trees.

Charlie Blackburn, Vegetable Production Manager, says that many changes are taking place at Twin Oaks Blueberry Farm and great improvements are planned for the future development of the project. One of the short-term goals of the farm is to implement a commercial kitchen that will allow the Twin Oaks Farm to sell and distribute its own products to the general public. In the meantime, the farm has already begun to offer to the community bedding plants, fresh produce from the vegetable farm, organic bread, and assorted jams.

Future plans include new products such as blackberries, cherry tomatoes, pickled okra, peach salsa, canned pears, and pickled beets. There will also be a renovation of the chicken coop in order to employ chickens for egg production (ten egg laying chickens will join the farm very soon!). The creation of a Visitor Center is also in the works, which will serve educational functions helping people learn how to eat better, preserve, and cook food.

Twin Oaks Farm is a place for people who believe in the possibility of being and eating “healthy, organic, and local.” It also gives students the opportunity to work and apply their theoretical knowledge in the field of Agriculture and Environmental Science.
High Performance Computing (HPC) allows scientists, engineers, and researchers to tackle complex computational modeling problems using high bandwidth, low latency networks with very high computing capabilities. HPC, as it is called, relies on amazingly fast hardware and super-efficient coding techniques. HPC resources and computing professionals provide the core capabilities for a new type of science, different from traditional theoretical and experimental approaches, where complex models of scientific phenomenon are developed and tested to provide insights into the important problems facing our societies and institutions.

At A&M-Commerce, we have many active researchers in the biological sciences, physics, chemistry, computer science, and mathematics departments using computational science and HPC computing resources to advance human knowledge and train the next generation of scientists in using these techniques.

The A&M-Commerce Department of Computer Science and Information Systems maintains and provides support for several HPC systems for use by faculty and students at the university. These systems have been acquired through generous support and competitive grants from national agencies, such as the Department of Energy, as well as local collaborations with high-tech industry partners, such as L3 Communications.

In particular, the department maintains a state of the art Dell commodity computing cluster with 512 processing cores, 768GB of in-core memory, and a theoretical peak performance of 4.6 teraflops. The HPC lab at A&M-Commerce also contains an Nvidia Tesla personal GPU supercomputer, with eight Nvidia Tesla GPUs containing a total of 1,920 processing cores and a peak theoretical performance of 624 gigaflops (7.4 teraflops at single precision computations).
Noyce Capacity Building Project

The A&M-Commerce Noyce Capacity Building project, funded by the National Science Foundation (PI: Dr. Ben Jang, Co-PIs Drs. Stephen Starnes and Tom Faulkenberry), is to build the capacity for talented undergraduate STEM majors (emphases in chemistry and Math) to pursue teaching careers. Building a high quality and high efficiency instructional model will increase the quantity and quality of STEM teachers in the state along with raising both the scores of students and their quality and inspiration to pursue STEM careers with a primary focus of service in high-needs school districts. STEM majors from A&M-Commerce are recruited in preparation of expanding current STEM teacher production. In addition, a restructuring of the current pathway and instructional strategies will strengthen the STEM certification program here at the university.

The 2-year project period has the following three goals:

I **Restructure** the STEM teacher preparation program at A&M-Commerce.

II **Strengthen** existing and establish new partnerships with community colleges to guide STEM majors to the teaching field.

III **Redefine** the partnership with high-needs districts in four primary areas: consensus on expectations for STEM teacher preparation, improved field-based training and mentoring of pre-service teachers, recruitment of high school students to become STEM teachers, and supporting beginning teachers to encourage them to persist.

The pilot summer internship program, implemented in summer of 2012, demonstrated that (1) the confidence of participants in teaching is greatly increased; (2) the interest of participants being a teacher increased.

According to the project evaluator, Dr. Deborah Porter, the capacity building Noyce Scholars project has worked well. The project PI and staff actively brainstormed throughout the proposal with an eye toward the future. The PI has considerable experience in grant management, as well as a deep knowledge of his field, chemistry, and was able to coordinate the staffing, the institution’s extramural funding system, and interactions with colleagues from other departments, specifically the College of Education. He demonstrated consensus building and problem solving skills throughout the planning and implementation. He truly facilitated an increase in capacity for a successful recruitment and training model to increase STEM teachers in this diverse region.

The project team is currently working diligently toward the goals of the project in year two.

“Building a high quality and high efficiency instructional model will increase the quantity and quality of STEM teachers”
Recycling with EAS

A&M-Commerce’s in-house waste management costs average $35,000 annually. A volunteer recycling group called the Environmental Awareness Society proposes to use some of those funds by reducing “trash” and increasing “recyclable” collection. Over the past two semesters, A&M-Commerce faculty, staff, and students may have noticed an increase in giant Pepsi bottle recycling containers which the EAS has monitored.

An increase in use and requests from students and faculty for more bins and services has enlightened this recycling group to implement an administration-run program. Many student volunteers commute, continuously move around, and a lack of funds needed for this growing endeavor makes it difficult to expand. A&M-Commerce will hopefully continue to grow and will need an efficient waste management program for the future. Our great university is more than just a school, but also a highly influential part of the community. Students here are learning about waste disposal and noticing the need for a smarter plan here on campus. It is our duty to lead the way by setting the proper example. Some of the next steps this group needs assistance with include: a solid program to implement with custodial management; a well-written petition that students and faculty can sign to show their support for a need to recycle at A&M-Commerce; speakers and leaders to implement several educational avenues teaching how, what, and when to recycle; volunteers to make fliers, set up booths at events, and/or help collect/haul recycling.

Contact the Environmental Awareness Society via Facebook TAMUC.EAS@groups.facebook.com or email at recycle@tamuc.edu for more information.

Dr. Keith D. McFarland: Honoring a Legacy

The Keith D. McFarland Science Building was officially named on March 22, 2013. Before a packed lobby and gallery, the alumni, faculty, staff, and students of A&M-Commerce honored President Emeritus McFarland whose tenure in the university’s highest office marked an era of facilities expansion, academic program growth, and technological enhancement heretofore unparalleled.

Both Texas State Senator Bob Deuell and Representative Dan Flynn spoke at the naming ceremony, along with President Dan. R. Jones and Derryle Peace, Director of Alumni Relations. While Congressman Ralph Hall could not attend, he sent his best wishes and a flag that flew over the capitol building as a token of his appreciation for President Emeritus McFarland.

President Jones said of McFarland, “With the possible exception of our founder, Professor Mayo, I know of no president of this university or any other who has dedicated more fully or given more freely of his life and professional career than the man we honor today, Dr. Keith D. McFarland.”

McFarland accepted his accolades with humility and humor, giving thanks to his family, especially his wife, Nancy. He thanked all of those who worked behind the scenes with him to accomplish goals during his presidency, noting, “Not only do we have those first class facilities we’re looking for, we have a first class education.”
The third annual Lion’s Pride BEST robotics competition was held October 20, 2012 in the A&M-Commerce Field House. The first competition in 2010 had 13 area schools participating. The demand for the program continues to grow with 29 teams competing in the 2012 competition.

BEST robotics is free to all participating schools, which allows districts of any size and socioeconomic status to participate.

The 2012 Lion’s Pride BEST teams included:

- Anna HS
- Boles HS/MS
- Christian Home Schoolers in Paris (CHIP)
- Commerce HS/MS
- Community HS/MS
- Greenville Christian School
- Hawkins HS
- Leonard HS/MS
- Linden-Keldare Mae
- Luster Stephens JHS
- North Lamar Frank Stone MS
- North Lamar HS
- Paris HS/JHS
- Quinian Ford HS
- Quinian Thompson MS
- Rains HS
- Rockwall Heath HS
- Royse City HS
- Savoy HS
- Sulphur Springs HS
- Texoma Home Educators
- The Fulton School Heath
- Trenton HS
- Trinity Christian Academy
- Utley Middle School
- Winnsboro HS/MS
- Wolfe City HS
Dr. Sang Suh Elected SDPS President

Dr. Sang C. Suh, Department Head of Computer Science, was elected 8th President of the Society for Design and Process Science (SDPS) at their 17th international conference held in Berlin, Germany, in June 2012. The SDPS is a professional membership organization with over 2000 professionals and researchers as members from all around the world. The Society was established in 1995 at the IC2 (Innovation, Creativity, and Capital) Institute of the University of Texas at Austin by founding software engineering visionaries with an idea to establish a permanent research forum and organization for transformative research, development, and education through transdisciplinary means. The founding principle of SDPS is that it is organized for educational initiatives and scientific breakthroughs for complex, real-world problems through transdisciplinary means and shall be dedicated to the study, understanding and use of design and process science for the benefit of all people throughout the world. With its vision for change, enabling the discovery of new approaches that lead to alternative solutions for the increasingly complex problems that face civilization, the Society has been actively involved with many international conferences, STEM education initiatives, industry consortiums, and the publication of books and journal papers. Dr. Suh will lead this society as president until 2014 with the goal of expanding the society with multiple global missions to solve real-world complex problems through integrative approaches based on human and societal needs.

New Faculty in Physics and Astronomy

Professor Matt A. Wood arrives as the new Department Head for Physics and Astronomy. Dr. Wood received his bachelor’s degree in physics from Iowa State University, and his master’s degree and doctoral degrees in astronomy from the University of Texas in Austin. He was previously Professor of Physics & Space Sciences at the Florida Institute of Technology in Melbourne, Florida. Dr. Wood has received $2M in external funding during his career, including current grants from NSF and NASA. He is an author of over 75 peer-reviewed publications and is the editor of the Journal of the Southeastern Association for Research in Astronomy.

Dr. Wood’s research interests focus on compact binary mass-transfer star systems known as cataclysmic variables due to their rapid and dramatic brightness variations. In these systems, a star similar to the sun loses mass to a compact stellar remnant known as a white dwarf. With a typical orbital separation of roughly the diameter of the sun, the orbital periods are only 2-4 hours. Dr. Wood models the 3D hydrodynamics of the accretion flows in these systems as well as analyzes observational data from ground-based telescopes and the NASA Kepler satellite.

Professor William G. Newton is a new Assistant Professor in the Department of Physics and Astronomy. He arrived at A&M-Commerce in 2008 as a postdoctoral fellow and served three years as an adjunct professor teaching science education, a discipline which he will continue to develop in his new position in an effort to give the best possible preparation to teachers of science at all levels. Dr. Newton received his bachelor’s degree in physics from Oxford University in the U.K., and then completed a master’s degree at University of Tennessee, doing research at Oak Ridge National Laboratory. He then returned to Oxford to complete his Ph.D. in physics before coming to Texas.

Dr. Newton’s research interests revolve around modeling the exotic astrophysical objects known as neutron stars, the ultra-dense collapsed cores of massive stars. The appearance and behavior of such objects is governed by poorly known aspects of nuclear forces, and Dr. Newton’s work focuses on developing the necessary nuclear physics models used in describing neutron stars, as well as using their observed properties to try and better understand the interactions between neutrons and protons at extremes of density and temperature.
Industrial Engineering Program Receives a 6-year Reaccreditation

The Industrial Engineering program at A&M-Commerce received a 6-year reaccreditation from the Engineering Accreditation Commission of ABET through September 2018. ABET is the accrediting body for engineering programs, both nationally and internationally. ABET accreditation provides validation that the program at A&M-Commerce meets the standards required for graduates entering the engineering profession.

The Department of Engineering & Technology implemented a new Construction Engineering program in 2010. The first graduates are expected in May 2013. A request for an ABET accreditation visit in fall 2013 was submitted in January 2013.

NOTEWORTHY

Nikolay Sirakov’s “Dermoscopic diagnosis of melanoma in a 4D space constructed by active contour extracted features” has been accepted by the Journal of Computerized Medical Imaging and Graphics for publication. The paper is already in press for hard copy and posted online. The journal, which is published by Elsevier, has a very good Impact Factor of 1.467.

Two other papers, in almost the same topic (active contours and 4D manifolds generation to determine geometric structures formed by malignant skin cancer vectors) were accepted this summer for publication in Lecture Notes of Computer Science, by Springer-Verlag.

Sirakov was invited to give a lecture by the University of Louisiana at Lafayette’s Department of Mathematics in November 2012 and also for an invited talk at the Symposium Defense Security and Sensing in Baltimore.

Biological and Environmental Science students from A&M-Commerce won several awards at the 10th annual Texas A&M Student Pathways Research Symposium held at A&M-Galveston. In the undergraduate category, Mr. Sravan Vemuri (Mentor: Dr. Cheriyath) and Mr. Marshall Joyce (Mentor: Dr. Hanna) took home the Top 5% award for life science. In the graduate category, Ms. Ashjan Khalel (Mentor: Dr. Cheriyath) won the Top 5% award also for life science.

USDA Rural Development - FY2012 - Small Socially-Disadvantaged Producer Grant (SSDPG) The grant proposal “Northeast Texas Initiative for Cooperative Development (NTICD)” by Dr. Jose Lopez (Project Director) and collaborators Dr. Bob Williams, Dr. Jim Heitholt and Dr. Curtis Jones has been selected for funding for the amount of $175,000.

College of Science, Engineering & Agriculture Dean, Dr. Grady Price Blount, has been re-elected to the Board of Directors of the Texas Space Grant Consortium.

Dr. Bao-An Li (Physics and Astronomy) has been named a Regents Professor by the Texas A&M University system. It is the highest award a faculty member can receive and a wonderful recognition of Dr. Li’s work. Congratulations!

Professor Carlos Bertulani is a new member (2012-2015) of the Committee of Education of the American Physical Society. The committee oversees physics education-related efforts in K-12, undergraduate and graduate education, and develops strategies to increase the number of undergraduate majors in physics.