

CENTRAL CONNECTICUT STATE UNIVERSITY

INFOTECH

SCHOOL OF ENGINEERING & TECHNOLOGY NEWSLETTER



New Civil Engineering Degree Program

Approximately two years ago the Department of Engineering learned that new “model engineering registration laws” would prevent future graduates of the CCSU Civil Engineering Technology program from obtaining a professional engineering license. This would significantly impact career opportunities for Civil ET graduates. A subsequent feasibility study determined a strong need for future civil engineer graduates to supply Connecticut government and industry, and showed that CCSU could successfully implement a new Civil Engineering degree program. Following review of the new program feasibility by CCSU and CSUS administrators, a CT Department of Higher Education new program application was prepared. **Dr. Cliff Anderson** developed the new civil engineering program with help from **Dr. Swamy Basim** and **Dr. Alfred Gates**. The Civil Engineering program was developed to meet and exceed national accreditation requirements.

In June 2009, the Connecticut Board of Governors for Higher Education licensed CCSU to begin the program, and the first Civil Engineering students were admitted in fall 2009. Civil Engineering graduates will be prepared in advanced mathematics through calculus and differential equations, and in science with calculus-based physics, chemistry, and at least one additional area of science. On graduation, students will have knowledge of the fundamental engineering sciences common to most engineering disciplines (statics, dynamics, fluid mechanics, thermodynamics, and mechanics of materials) and a solid undergraduate foundation in general civil engineering principles, enabling continued education at advanced levels. The program includes courses in environmental, geotechnical, surveying, structural, transportation, and water resources engineering.

The new Civil Engineering program prepares students to successfully complete the National Council of Examiners for Engineering and Surveying (NCEES) fundamentals of engineering examination that is

In June 2009, the Connecticut Board of Governors for Higher Education licensed CCSU to begin the program, and the first Civil Engineering students were admitted in fall 2009.

the first step toward professional engineering registration. The program shares a set of seven mathematics and science courses and seven engineering courses with the Mechanical Engineering program. In the fall 2009 semester, twenty-eight students had transferred into the Civil Engineering program. New first year students will begin their Civil Engineering program in fall 2010.

Mechanical Engineering – The First Graduating Class

May 2009 saw the first class of students graduate from CCSU's new Mechanical Engineering program - two students were in the graduating class. Over the past four years enrollment in the mechanical engineering program has grown to over 150 students. With these graduations, CCSU could complete its application for national accreditation from the Engineering Accreditation Commission (EAC) of ABET, Inc. **Dr. Nidal Al-Masoud** lead the faculty team that prepared the extensive documentation required to obtain EAC of ABET accreditation.



Engineering students using the Civil Engineering Lab Open Channel Flume.



SPRING 2010
vol. 19 no. 1

editor:
Nancy Krackowsky, School
of Engineering & Technology,
Associate Dean

design/layout:
Karen Eustis, CEGT
Department, Faculty

CCSU is a University of the
Connecticut State University
system and an AA/EQ
institution.



Dr. Zdzislaw B. KREMENS

DEANS' CORNER

This has been another remarkable year for the School of Engineering & Technology (SE&T) in spite of all the challenges presented by the economic recession. As

we are concluding work on a strategic plan designed to ensure student success while responding to critical state workforce needs, I would like to reflect on three of the most important projects and activities that we achieved this year.

Looking Back

First, we have just launched another new engineering program, the BS in Civil Engineering. This is the second engineering program introduced at CCSU and the CSU System, and it was approved by the state Board of Governors of Higher Education in June 2009. The Civil Engineering program will definitely help the state economy, but it is primarily intended to create professional development opportunities for civil engineering graduates. Designed to meet national accreditation engineering standards, it will prepare students for the first step toward professional engineering registration. Strong support from the University's administration--which recognized the progress of our engineering programs--provided the School of Engineering & Technology with equipment and additional space. Our civil engineering faculty are to be commended for their excellent job during the very long and extensive DHE approval process.

Second, prestigious professional accreditation agencies have recently

concluded their rigorous evaluation of our academic programs. Professional accreditation provides quality assurance and promotes our continuous improvement process. This past year was very busy in our multi-year preparation for various accreditations. In summer 2009 our undergraduate Construction Management program was reaccredited for three years. In fall 2009 we hosted two separate accreditation teams from the Accreditation Board for Engineering and Technology (ABET). In October we had a visit from the Technology Accreditation Commission (TAC) of ABET as a part of our reaccreditation application for all three of our Engineering Technology majors: in Civil, Mechanical, and Manufacturing Engineering Technology. A month later, our BS in Mechanical Engineering program was meticulously scrutinized by the Engineering Accreditation Commission (EAC) of ABET as we applied for the initial accreditation for our first engineering program. All ABET accreditation decisions are expected in July 2010. In the meantime the Technology and Engineering Education department participated in the National Council for Accreditation of Teacher Education (NCATE) reaccreditation process in collaboration with the School of Education & Professional Studies. The preliminary report by NCATE is very promising.

Third, our student enrollment this past academic year has been impressive again. The School's enrollment grew in fall 2009 by some 6.5% as compared to fall 2008, but at the same time the Full Time Enrollment (FTE) grew by more than 10%. This means that our long-term recruitment efforts through various middle and high school activities are bringing more talented students to our programs. Our academic programs are definitely a very affordable and attractive college choice for many talented students. The main goal is to retain them in our school and facilitate their success during

their course of study. Timely graduation is in the best interest of all students and of our industries.

Looking Ahead

Engineering and technology programs are very academically challenging. Our students need individual attention, excellent advising, and in many cases personal mentoring. While challenging them to the full extent of their potential, our faculty have to lead students through rigorous and very demanding curriculums. Our relatively low student-faculty ratio provides an opportunity for individualized instruction and advising. Students also gain invaluable professional experience through cooperative education and internship opportunities. At the same time, our laboratory courses include various hands-on activities where students enhance their theoretical knowledge by conducting experiments. These important aspects of engineering/science/technology education are not inexpensive, but the quality of our education cannot be compromised when we look for potential budgetary savings.

On March 14, 2010, an article on the front page of The New York Times reported that because more people seek re-training and professional development in difficult times, they are very likely to incur large indebtedness as a result of high tuition at for-profit colleges and trade schools. On the contrary, as a public institution of higher education CCSU is real bargain. We provide high quality, affordable education opportunities to Connecticut residents. I am confident that our highly qualified faculty and staff are fully prepared for the challenges of the contemporary higher education market in a downturn economy. Some financial analysts predict that the next couple of years will be difficult. Nevertheless, we remain optimistic since we are well positioned both to help many individuals make their dreams come true and at the same time to contribute significantly to state economic prosperity.

Construction Management Program - Three Year Re-accreditation



The Construction Management program underwent a re-accreditation visit from the American Council for Construction Education (ACCE) in October 2008. The visiting team spent time going over course materials and meeting with faculty and administrators from across the University. The ACCE's Accreditation Committee reviewed the report and recommended that the program be reaccredited for three years. The ACCE's Executive Board took the recommendation and approved the CCSU Construction Management Program's three year reaccreditation at the July 2009 meeting in Columbus, OH. The program is currently preparing the First Year Report, which is due in May 2010.

Technology Education Program Honored with National Accreditation

CCSU's department of Technology and Engineering Education was honored on March 19 at a ceremony in Charlotte, North Carolina, for maintaining its national accreditation. Richard Seymour, president of the Council on Technology Teacher Education (CTTE), wrote that CCSU would receive this distinction "for receiving full national recognition from the National Council on the Accreditation of Teacher Education (NCATE)."

Since CCSU's teacher certification program in technology education was already fully recognized by NCATE and CTTE, Seymour wrote, the department has maintained its "outstanding status."

Recognition is generally awarded after the program responds to issues raised during a first-round review. But to our pleasant surprise, upon their initial review, NCATE/CTTE representatives awarded CCSU's program unconditional National Recognition.

Recognized programs must meet standards in several areas. First, at least 80% of the program's graduates must pass a licensure exam (our pass rate over the past decade is 99.08%, and our graduates score at or above the national average on every subcategory of the test). The reviewers also analyzed our curriculum against ten content standards, and reviewed actual evidence of our students' work, both on campus and with K-12 students. Finally, they looked at how we use these assessments to improve our program. We met or exceeded expectations in all areas.



Paul Post (L) of Ohio State University presenting a plaque commemorating NCATE/CTTE approval of CCSU's Technology Education program. **Dr. Patrick Foster** accepted the plaque on behalf of the faculty.

Considering our continued success with NCATE/CTTE recognition, the CCSU curriculum in technology education has been remarkably stable. This has been possible because of a unique, forward-looking, and flexible curriculum implemented in the late 1960s. This program, which was somewhat controversial at the time, replaced "unit shop" courses in areas like woodworking and printing with courses in materials processing, information processing and energy processing. In the early 1990s, systems courses in transportation, manufacturing and communications were added to this core.

The program was revised again in 2006 when we reconfigured the systems courses to focus on skills and knowledge that connect these systems—including robotics, prototyping, and engineering. We also added a practicum course in which students work for 20 or more hours with K-12 students in extracurricular activities. It was this revision, spearheaded by **Dr. Michael Vincenti**, for which we received recognition from NCATE and CTTE.

In all, more than 1,000 people have completed the technology education certification program at CCSU since the new program's first graduates in 1971. This is in addition to hundreds of master's degrees, sixth-year programs, and cross-endorsements.

Paula Chapla the School of Engineering and Technology's 2009 Outstanding Alumnus

Paula Chapla '78, who was one of just a handful of female students in the technology education program during the 1970's, is approaching 30 years of service with Sikorsky Aircraft in Stratford, one of the world's leading designers and manufacturers of military and commercial helicopters. In her earliest post-CCSU days she worked 90 hours a week teaching Industrial Arts at Shelton High School during the day, while also earning an hourly wage operating machines on second shift at Sikorsky. From those humble beginnings



she moved on to numerous positions of increasing responsibility within the company. Today, as Operations/Transformation Manager for Aerostructures, Chapla supports production of BlackHawk UH60M and HH60-M (Medivac) airframes. But Chapla didn't come to CCSU to study technology. She enrolled as a political science major. "I was involved in helping the School of Technology move into its new space at Copernicus at the time," she recalls. "That's when I met all the Industrial Arts teachers. That changed my life. Talking with them about electrical systems, cars, refrigerators – these were tangible things. It clicked for me." In her very limited "spare" time, Chapla is pursuing a second master's degree – this one from Central. "In today's world, especially with technology, it's adapt or die," she says. "CCSU is adapting, and there is a world of opportunity out there for engineering and technology students today."

Michele Dischino Named Finalist for 2010 Women of Innovation Award



Assistant Professor of Technology and Engineering Education, **Dr. Michele Dischino**, was one of fifty-nine women from across Connecticut who were honored on January 20th during the Sixth Annual Women of Innovation awards dinner at the Aqua Turf Club in Southington. Dr. Dischino, a member of the CCSU faculty since

2006, was named a finalist for the award in the Council's Academic Innovation and Leadership category. Nearly 600 guests attended the awards program, which is sponsored by the Connecticut Technology Council, the state's industry association for the technology sector. The CTC program is designed to honor women – both students and those in the workforce – who are innovators, role models and leaders in the technology, science and engineering fields.



Eleventh Annual FIRST LEGO Competition at CCSU

On December 13, 2009, the School of Engineering and Technology organized and hosted the eleventh Connecticut FIRST LEGO League (FLL) Robotics Competition. This year's challenge was to increase transportation safety and efficiency. Designed to inspire middle school students to learn more about math, science, engineering and technology, the "Smart Move" challenge competition brought together approximately 500 middle-school students (ages 9 through 14) for a two-phase competition.

In the research phase, each of the 52 teams presented solutions they had developed during the fall for a transportation problem in their community. They explained to a panel of judges how they proposed to make it safer and easier to transport people, information, and goods. Before competing in the state FLL tournament, every team was required to share their research and recommendations with decisionmakers in their community.

Connecticut FIRST™ LEGO® League Robotics Competition

These research presentations are given by the students, who must explain their research and answer questions without adult assistance. Scoring is based on on six criteria, including of research quality, data graphing, analysis, and presentation.

The "robot-game" phase of the 2009 competition gave students first-hand experiences in designing and programming sensor-equipped vehicles (their robot) to gain access to places and things, while avoiding or surviving impacts. Students constructed and programmed LEGO robots to complete nine "missions" while keeping passengers safe, avoiding and limiting the impact of collisions, mitigating traffic jams, and reducing inefficient transportation.

The 52 teams had been selected through regional competitions held in the weeks prior to December 13 in Berlin, Enfield, Old Lyme, Shelton, and Vernon. In total, over 1000 students (113 teams) from Connecticut middle schools participated in the FLL program this year.

The event was co-sponsored by Northeast Utilities, Millstone Nuclear Power Station and CT Science Center and was co-organized by Technology and Engineering Education faculty and students and Michael Gentry of Northeast Utilities.



Dr. James DeLaura judging two middle school students' robot entry.

3rd Annual Transportation Mini-Series Conference

Dr. Bin (Brenda) Zhou and students from the Department of Engineering attended the 3rd Annual Transportation Mini-Series Conference co-hosted



by Women's Transportation Seminar (WTS) and Institute of Traffic Engineers (ITE). Thanks to the generous support from the Department of Engineering and the Connecticut Valley chapter of WTS, CCSU students gained a valuable learning experience on Green Transportation. The conference features State Department of Transportation representatives, municipal leaders and professionals within the industry, addressing issues in Financing Green Transportation Projects, Transportation & Climate Change, Greenovation 101: Economic & Environmental Benefits, Smart Transportation, and CT Rail: Present & Future. Students enrolled in the ETC 454: Introduction to Transportation Engineering class further assimilated the conference materials through an essay assignment and in-class open discussions. Based on student feedback, our students appreciated the opportunity to learn modern topics outside of the classroom and to interact with transportation professionals at the conference. Many conference participants talked with our students about their firms and projects. One outstanding CCSU student obtained a job offer through networking at the conference.

Graphics Technology student places as finalist in Photography Contest

Shaune Roberts, a first year Industrial Technology, Graphic Technology major, has placed as a finalist in *Photographer's Forum* magazine's 30th Annual Student Photography Contest, sponsored by Nikon, USA. Her beautiful image of the sands of time is a stand out among the thousands of entries.

Over 3,500 students participated from the United States, Canada and around the world. Judges for this year's contest were: Douglas Manchee, chair of the advertising photography department at Rochester Institute of Technology; Mark Takeuchi, faculty, Art Center College of Design; and Barbara Vilander, Ph.D., author, and photography instructor at the University of California at Santa Barbara.

Images awarded First through Fourth Place will be published in the May/Summer 2010 issue of *Photographer's Forum* magazine. Congratulations Shaune!



CCSU Hosts 2010 Human Powered Vehicle Challenge

The School of Engineering and the Human Powered Vehicle Team at Central Connecticut State University hosted the American Society of Mechanical Engineers (ASME) human powered vehicle challenge May 7th through the 9th, 2010. The event was sponsored by CCSU, ASME, CNC Software/ Mastercam, and the Connecticut Technology Education Association. Thirty one University teams and over 200 students from the United States and South America participated in this three day event which included one day of professional design presentations and two days of competitive racing at Stafford Motor Speedway in Stafford Springs, CT. Event information, images, and results can be viewed at the URL sited below.

http://www.asme.org/Events/Contests/HPV/Human_Powered_Vehicle.cfm



Seven students from the human powered vehicle team accompanied by their advisor **Dr. David Sianez** competed in the American Society of Mechanical Engineers vehicle challenge at Drexel University in their delta trike design "Ripped Racer" in 2009.

INTERSECTING PATHWAYS

Pathways Senderos goes to college UPDATE. Biomolecular Sciences and the Pathways/Senderos Center



Advanced research students from the Department of Biomolecular Sciences are serving as mentors for high school interns from the Pathways Senderos program. Pictured above are BMS-CCSU students Randy Taylor, Marissa Nasshan, Adrian Pacheco and Amarilis Perez. Not pictured are Shannon Soucy, and Damek Spacek.

The department of Biomolecular Sciences has continued its community engagement project that aims to bring teens into the research laboratories as interns working with advanced CCSU undergraduates on current research projects. The program, which began in 2008 with six pathways students working with three CCSU mentors, has now grown to over ten pathways students with eight CCSU mentors. This year we added a curricular component for the CCSU mentors. A new course entitled Mentorship in Biomolecular Sciences was added to the department's course offerings. Student mentors can now earn a credit towards graduation as they learn to be mentors for the pathways participants. This new curricular

component fosters the relationship of faculty as mentors to CCSU students who in turn serve as mentors to the pathways participants. One goal of the program was to illuminate the possibility of college and a career in science for the pathways participants. We are pleased to report that one of our Pathways participants from 2008 is now enrolled in a science major and was named to the Dean's list. Two additional participants, who will be graduating this June, are in the process of applying to CCSU for Fall 2010. The department plans to continue the program for the 2010-2011 academic year. For more information on the program or to sponsor one of the pathways interns, please contact the program coordinator, Dr. Thomas King (kingt@ccsu.edu).

CCSU Technology & Engineering Education Students Visit China

A group of CCSU Technology and Engineering Education students joined **Dr. James DeLaura** and **Dr. Michele Dischino** on a recent visit to China. The visit was arranged by the faculty as a result of their previous visit to Ningxia Provence. While in China, students visited secondary schools, as well as universities and polytechnics.

The group traveled from New York to Shanghai where they visited the Shanghai Science & Technology Museum and other famous sites.

The group traveled to Xi'an home of the world famous Terra Cotta Museum a World Heritage Site, in addition to visiting Shaanxi Normal University - a sister university to CCSU. The following day the group flew to Ningxia in Northwest China on the edge of the Gobi Desert bordering Inner Mongolia.



Here students toured schools and interacted with students of Ningxia Polytechnic and Ningxia University. CCSU students enjoyed home visits with the university students for a very dramatic part of their international experience. Following this visit the group flew to Beijing for a couple of days where

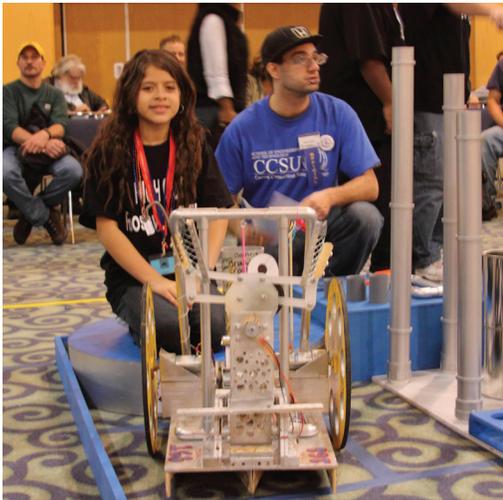
they explored Tiananmen Square, The Great Wall, the Olympic site and the Forbidden City. A trip to the famous Night Market provided a very interesting cultural experience. Upon return to Shanghai for the return trip home, the students were able to ride the famous MagLev and traveled at 262 MPH between Shanghai and the airport.

The experience as explained by the students was "awesome!"

This year Technology and Engineering Education students will be traveling with Drs. DeLaura and Dischino to Germany and Poland during their spring break.

The Exciting World of BEST Robotics at CCSU

The atmosphere is electric with excitement and anticipation, as the band's jubilant playing competes with the cheering of the crowd and the shouting of the playing teams. This is the exhilarating culminating event of the Connecticut BEST Robotics competition. Each year, CCSU serves regional middle and high school teams as the Connecticut BEST Robotics hub. The BEST (Boosting Engineering, Science, and Technology) program provides talented and outgoing teens with the opportunity to build their own robots to meet an engineering challenge, and compete against each other.



Dr. Ravindra Thamma, of the Department of Manufacturing and Construction Management, has served as director for the Connecticut BEST hub since 2006. The hub team, consisting of **Dr. Thamma**, **Dr. Daniel Kirby**, and **Dr. Haoyu Wang**, hosts participants from all over New England and New York. The team puts together robotics kits for up to 30 teams, hosts a kickoff meeting, creates a playing field, and hosts the competition.

Every year, BEST teams are given a challenge and a limited supply of resources to build their robot, using imagination and abilities of their team. The students have six weeks to devise, build, test, and bring the robot back to CCSU to compete. At the competition, the robots must perform the given tasks while the team adheres to the given rules. Additionally, the teams present their work orally and with notebooks to judges from local schools and industry. All teams involved have the opportunity to experience real engineering and technology problems, giving students a feel for these fields in a positive and exciting way.

We invite all educators who are able to bring a middle or high school team to CCSU to consider forming a team. Other opportunities to get involved in the Connecticut BEST hub include sponsorship of the hub or events, volunteer work, and hosting or mentoring a team.

This program gives CCSU faculty the opportunity to get involved in enhancing awareness and interest in the fields of engineering, science, and technology among local schools. This also benefits CCSU's School of Engineering and Technology as a whole, by providing interaction with the community as well as a way to increase interest in the school's various engineering and technology programs.

For more information, email the Connecticut BEST Robotics hub at robotics@ccsu.edu.

School of Engineering and Technology Recent Grant Applications & Awards

ITEST National Science Foundation STEM Grant Application

The School of Engineering and Technology at Central Connecticut State University (CCSU) Principal Investigator, **Dr. Segun Odesina**, has proposed the ITEST-STEM Strategy project titled "Robotics Technology Education in a Digital World Summer School" to attract talented, underrepresented and underprivileged groups to achieve degrees in Engineering, Engineering Technology, Sciences, and Technology by exposing them to a summer Robotic Technology Education program thereby sensitizing them to emerging technology and helping them to consider future educational and career opportunities in engineering and technology disciplines and therefore exposing them to life-long learning opportunities. The program will bring 24 students to the university to participate in a Robotics design

and programming workshop for 4 weeks in the summer. There will be two tracks to this program. One track will be targeted towards students currently in grades level 4, 5, 6, and 7, and another track targeted towards students in level 8 through 11. The project seeks \$409,804 over a period of three years to recruit these students through the Science, Mathematics and, Education Supervisor for the New Britain Public School system, Science Teachers as well other Community STEM based organizations. The selection process will be based on the interest and the potential of the participants to succeed in engineering and technology programs. Each group of students will be assigned to a Co-Principal Investigator who will help with planning of the project and the designing of all program materials as well as implementation.

ATE National Science Foundation STEM Grant Award

Dr. Michele Dischino is Co-Principal Investigator, National Science Foundation Advanced Technological Education (NSF-ATE) curriculum and professional development project funded project, "Problem-Based Learning (PBL) for Sustainable Technology: Increasing the STEM Pipeline (STEM PBL)." Using Problem-Based Learning (PBL), they are developing active hands-on learning resources that challenge students to explore new and emerging technologies, to "think outside the box," and to apply their knowledge, skills and creativity in solving authentic real-world problems. Project period: 09/01/09-08/31/2012. Total support awarded: \$900,000 of which \$37,839 will be awarded to CCSU over the three-year life of the grant.



TAC of ABET and EAC of ABET

Leadership and Quality Assurance in Applied Science,
Computing, Engineering, and Technology Education

This past year has been very intense with regard to professional accreditations by Accreditation Board for Engineering and Technology (ABET). Coincidentally, the same year we applied for re-accreditation from TAC (Technology Accreditation Commission) of ABET and for initial, first time ever, accreditation of our relatively new BS in Mechanical Engineering program from EAC (Engineering Accreditation Commission) of ABET.

The Mechanical Engineering program was established in 2006, however by ABET policy one can not apply for the initial accreditation until the program has at least one graduate. If accreditation application is successful all graduates from the previous year are retroactively considered as graduates of the accredited program. Since we had the first graduates in May 2009, we were eligible to apply for the visit in fall 2009. Actually, the preparation for this accreditation begun with the program inception in 2006, as Program coordinator **Dr. Nidal Al-Masoud** along with **Dr. Alfred Gates** and **Dr. Peter Baumann**, had deliberately designed the program to meet and exceed the EAC of ABET standards. Nevertheless, Dr. Nidal Al-Masoud was coordinating an extensive amount of work on the Self-Study report while on January 31, 2009 we filed a request for initial accreditation.

We have been maintaining accreditation from Technology Accreditation Commission (TAC of ABET) of for our three majors in Engineering Department: BS in Civil Engineering

Technology since 1986, BS in Manufacturing Engineering Technology since 1986 and BS in Mechanical Engineering Technology since 1998. Since these programs are currently accredited by TAC of ABET until September 30, 2010 we had to apply for re-accreditation by filing a special ABET application form, along with additional documentation by January 31, 2009. Obviously the process of preparation for reaccreditation has not merely started at the moment of application, but now with outcomes assessment based accreditation standards it has been a routine, continuous activity in the department of Engineering. Nevertheless, the activities intensified as Drs. Clifford Anderson, Peter Baumann, and Zbigniew Prusak who are program coordinators for Civil ET, Mechanical ET and Manufacturing ET respectively, have been finalizing their Self-Study reports including Assessment Reports. This entire effort was coordinated by Dr. Alfred Gates, Engineering Department Chair.

Even before June 30, which is the due date for submission of the Self-Study reports to ABET, we established early communication (teleconferences, e-mails, telephones) with both TAC of ABET and EAC of ABET visiting team Chairs, who had been just appointed by EAC of ABET and TAC of ABET. That was a very helpful process as we could improve our Self-Study Reports and better prepare the display materials for the upcoming visits on campus. Having submitted the reports Dr. Baumann, Dr. Al-Masoud and Dean Kremens attended special summer sessions and orientation days in mid July in Washington, DC. Participation

in those sessions is voluntary but it is a great opportunity to meet personally with the visiting team chairs and even initially discuss the self-study reports and next steps prior to the on-site visits by ABET teams.

The actual ABET evaluators visits in fall 2009 were culminating the major effort by all program coordinators and the Engineering Department Chair, but also by all faculty from the Engineering Department as well as numerous faculty from cooperating departments in the School of Engineering and Technology as well as from other schools. Strong support from all participating faculty was critical in this process. All teaching materials and related documentation had to be organized by learning outcomes in the display room (NC132). The TAC of ABET visiting team (chair and three program evaluators) was at CCSU October 18-20, 2009. The EAC of ABET visiting team for engineering program consisting of the chair and two program evaluators were on campus November 8-10, 2009.

During exit interviews both ABET teams presented initial, preliminary findings. However the formal drafts of the evaluation reports we received in early months of 2010. Within 30 days we submitted our institutional responses. The final decisions will be made by ABET during their annual meeting in July 2010. Given the entire process and preliminary feedback we are cautiously optimistic about the final decisions by the ABET, which is definitely the most prestigious and well established nationally and internationally professional accreditation organizations.

Researching the History of Flow Production

Since 2008, **Dr. Bob Emiliani** has been leading an effort with world-renowned British automotive industry historians Peter Seymour, Jonathan Wood, and Robin Barraclough to study the life and work Frank George Woollard (1883-1957), a pioneer in flow production whose world has been long forgotten. Woollard was a mechanical engineer who worked for nearly three decades in various roles in design, production, and senior management. He made major contributions to flow production, progressive management, and industrial automation when he worked at Morris Motors from 1923-1931. Woollard's flow production system was remarkably similar to current-day Lean production and utilized most of today's Lean principles and methods. In addition to unearthing an enormous quantity of new details about Woollard's life and work, the research has revealed that some key contributions attributed to Toyota managers should instead be attributed to Frank Woollard. This research has included two trips to Birmingham, England, and resulted in the discovery previously unknown published papers, personal archives, and first-hand testimony from a 96 year old close friend of Woollard's. It fills major gaps in the literature on the history of flow production generally and in the British motor industry in particular. This project has resulted in the re-publication of Woollard's 1957 book, *Principles of Mass and Flow Production*, with extensive commentary by Prof. Emiliani, as well as a paper that will soon be submitted to the *Journal of Management History*.



Jonathan Wood, Bob Emiliani, Peter Seymour, Robin Barraclough (not pictured), 22 May 2009, in Ludlow, Shropshire, U.K.

2010 Moonbuggy Team Places 7th in NASA Sponsored International Competition

As part of the Lunar Exploration Club, a team of CCSU engineering students entered a race vehicle in the Great Moonbuggy Race of 2010 April 9th and 10th in Huntsville, AL. The NASA sponsored race is multi-faceted, a design-build competition and an athletic competition since the vehicle is pedal powered. The entire project is rigorous since the 0.7 mile race course is a simulated lunar surface that is carefully designed by NASA engineers to break Moonbuggies. Proof positive, over half of the entries in 2009 DNF (did not finish) the course given two attempts—CCSU being one of those. As the first Connecticut university team to compete in this event, the pioneers of 2009 were not deterred and put their experience toward a better and “badder” design for 2010. The 2010 CCSU team did indeed significantly improve their performance by placing 7th in an overall field of 54 international competitors. As shown in the photo, the riders are now in series, and the suspension is just plain rugged. The wheels are homemade from heavy-duty parts and each rider has a separate, completely enclosed, 8-speed transmission. The vehicle is 4-wheel drive and is equipped with live differentials and rear manual traction control.



Pictured first row left to right: Walid Alomaru, Emmanuel Figueroa, Pawel Abramek, Massab Hashmi, Jeffrey Cloutier, Dr. V. Naoumov, Hitesh Shah, Carly Woodward. Second row: Mounir El Rassamni, Jason Williams, Nicholas Manocchio. Not shown: Joseph Wickham, Majidullah Dehlavi, Arsalan Shamim.



Joseph Wickham cuts steel for suspension parts.

Costa Rica’s natural wonders are captured in 360°

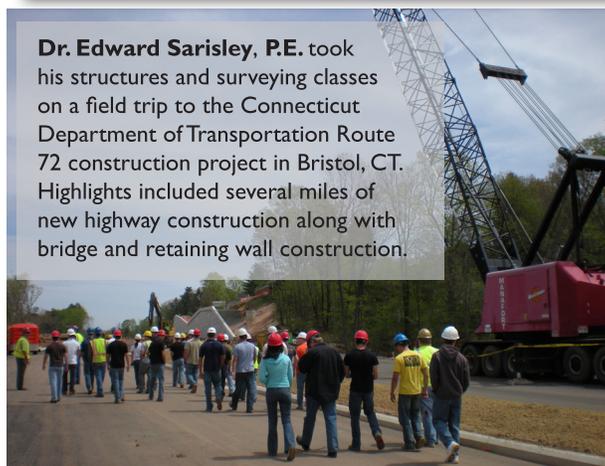
On March 22, Prof. Antonio Scontrino joined one of his more talented students, Kahlil Calavas, in Costa Rica. Here they helped the Corcovado National Park and some of the surrounding resorts to promote and show the beauty and uniqueness of this amazing area by using the power of 360 Panoramic Photography in order to create a breathtaking Virtual Tour. This type of cutting-edge technology is hot on the market today and the high-definition 360 degree images allow the world to see this area in the most real way possible.

The Corcovado National Park is the backpacking experience of a lifetime. It encompasses the only remaining old growth wet forests on the Pacific coast of Central America with 13 major ecosystems including lowland rain forest, highland cloud forest, jolillo palm forest, and mangrove swamps, as well as coastal marine and beach habitats. Here there is a good chance of spotting some of Costa Rica’s shyest and most endangered inhabitants like Baird’s Tapirs, Jaguars, Scarlet Macaws, Harpy Eagles, Red-backed squirrel monkeys and White-lipped Peccaries.

Antonio Scontrino teaches Virtual Reality and 360 Panoramic Photography in the Computer Electronic and Graphics Technology Department. Examples of his work can be seen at www.antonioscontrino.com or www.ipnotica360.com



Dr. Edward Sarisley, P.E. took his structures and surveying classes on a field trip to the Connecticut Department of Transportation Route 72 construction project in Bristol, CT. Highlights included several miles of new highway construction along with bridge and retaining wall construction.





With funding from the National Aeronautics and Space Administration (NASA), the School of Engineering and Technology has developed an innovative, year-long program to reach out to high school juniors with high potential in math and science and excite them about careers in aerospace engineering. Now in its second year, "Go For Aerospace!" provides mentoring and support to these students and encourages them to pursue a degree in engineering. Based on the recommendation of high school math and science teachers in four districts (Waterbury, New Britain, Hartford and Bridgeport), forty high-achieving high school juniors are participating this year.

Zdzislaw Kremens, dean of CCSU's School of Engineering and Technology, conceived the idea for the program, which is being implemented by four faculty, **Nidal Al-Masoud**, **Peter Baumann** and **Viatcheslav Naoumov**, from the Engineering Department, and **Michele Dischino** from Technology and Engineering Education.

GO FOR AEROSPACE!

"These professors hope to inspire the next generation to consider careers in the aerospace field," Dean Kremens said. "Too few students recognize the opportunities available to them with an engineering degree."

The 2009-2010 program kicked off with a dinner at CCSU for the students and their parents, nominating teachers, industry and public education representatives, and university officials. **Mr. Donald W. Rethke**, a.k.a. "Dr. Flush," delivered the keynote address. Mr. Donald Rethke was employed by Hamilton Sundstrand and actively supported NASA's manned space flight program for 37 years, participating in the development of life support systems from Apollo to the space station.

During the spring semester, the high school students participate in four full-day field trips, during which they work with CCSU

faculty and students on projects related to mechanical and aerospace engineering, and visit companies including Hamilton Sundstrand, Pratt and Whitney, Kaman and Trumpf to tour research and manufacturing labs and speak with practicing engineers.

The culminating event will be a summer institute where students will spend four days at CCSU participating in activities including seminars and workshops designed to familiarize them with campus life and the college application process. Students will then travel to NASA's Goddard Space Flight Center in Maryland for a five-day visit during which they will learn about state-of-the-art engineering directly from Goddard scientists who operate most of NASA's research satellites. The trip will also include a tour of the Smithsonian Institution's National Air and Space Museum in Washington, D.C.



Second Girls and STEM Expo

On Thursday, April 1, 2010, 100 seventh grade girls from middle schools in New Britain, Newington, Meriden, Hartford, and Bloomfield participated in hands-on, science related workshops at the Girls and STEM Expo at CCSU. The Expo is the second collaboration between CWEALF (Connecticut Women's Education and Legal Fund) and CCSU's School of Engineering and Technology; and this year the Ruthe Boyea Women's Center joined the collaboration for the event.

Girls and STEM Expo is a series of one-day workshops designed to promote middle school girls' interest in Science, Technology, Engineering, and Mathematics (STEM) education and careers. The workshops are interactive and present concrete applications of scientific methods and technology; introduce the students to role models and potential mentors; and foster girls' sense of participating in a peer group of future workers in STEM careers. This Expo offered student workshops like Whodunit? which looked at how blood type and DNA can be used to aid in forensic science and the Night Sky which showcased how to find your way around the night sky using CCSU's planetarium.

Jacqueline Cobbina-Boivin, coordinator of women's programs for the Ruthe Boyea Women's Center says, "the Ruthe Boyea Women's Center is excited to join with CWEALF and the School of Engineering and Technology to host this year's event. We are especially pleased with

the turnout from our female students majoring in science, engineering and technology to serve as role models and inspire young girls to pursue future degrees in these fields. A special thanks to everyone who participated in this great event.



Dr. Kathy Martin conducts 'Whodunit?' workshop – students consider if blood type and DNA can be used to aid in forensic science.



Graphics Laboratory “Back to the Future”

The Graphics Technology program has, over the past 6 weeks, taken delivery of a number of pieces of equipment that will help to broaden the digital and conventional print technologies that can be taught to students in the program.

At the core of the new gear is a color viewing booth, densitometer and color management software package. This allows us to establish image quality standards and protocols so that consistent quality levels predicated on industry standards can be achieved. Being able to print on any substrate is great but we need to be teaching students how to achieve predictable results using objective analysis. For the first time in this programs history, we'll judge output using statistical process control tools rather than subjective analysis by an operator. We felt that quality management should drive every process that we teach.

To support the existing large format display graphics printer, we've purchased a laminator that not only can apply clear plastic protective

coatings, but will allow the printed vinyl media to be mounted to foam core board, coroplast, and other rigid polymer substrates. Coupled with a large trimming device that resembles a commercial glass cutting machine, we can produce display graphics that are prepared accurately and professionally.

In terms of print technologies, a small pad printer is being made ready for installation and it will allow us to use a relief printing technology to imprint small 3 dimensional objects. Many promotional items are printed with this equipment as are small medical devices, small dimensional packaging, component parts used in the electronics industry for example and many irregular shaped objects like flash drives, cell phones- even golf balls.

A 4-station, 4-color screen printing system will be setup in the near future too. With the recent and long over due move to a photo-direct screen printing process, the new exposure unit purchased will allow screens to be created for multi-color printing that have really tight registration

requirements. This exposure unit will pull triple duty in that plates for offset lithography, screens for screen printing, and flexo plates for pad printing and flexography can all be produced with this device.

Rounding out the equipment mix is a new color laser printer that will allow us to produce color output to sheets just over 11x17". This is not a production system per se but it will give us color output that we can spend time analyzing, troubleshooting and correcting. A folder has been installed that can fold sheets that are up to 12x18".

In sum, we've brought in new gear that supports many digital and conventional print technologies as well as color management.

Our collective purchasing decisions will really benefit the students that take our classes since the variety of processes that we can expose them to will come much closer to the variety of technologies that they'll need to use and manage in their jobs after graduation.

Graphic Technology Students check out the new Excalibur Keencut.



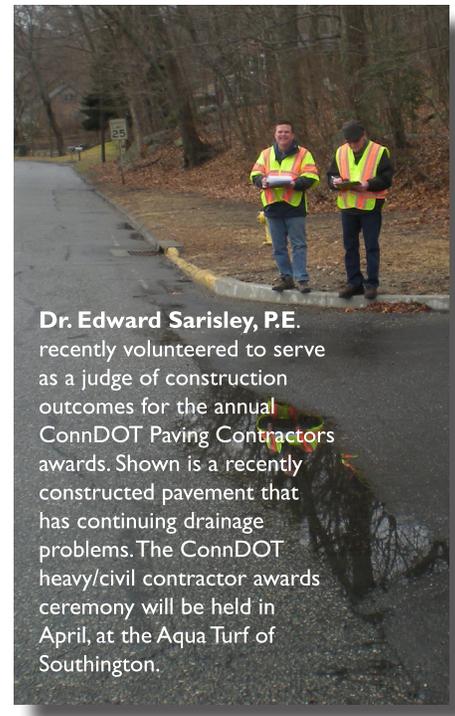
Human Powered Helicopter Team

Engineering and Engineering Technology students are working on three different human powered helicopter test fixtures to conduct experiments to maximize the lift to power ratio for a fixed weight. There is a worldwide on-going human powered helicopter collegiate competition where the goal is to design and build a human powered helicopter that can hover for an extended period of time. This is a very difficult task because it takes almost one horse power to hover an extremely light weight helicopter in ground effect. Not many athletes can generate one horse power for over 10 seconds. The helicopter must weigh approximately 80 pounds and the operator/pilot must weigh around 140 pounds. The operator must generate enough power for 220 pounds of lift which is between .7 to 1 horse power depending on the configuration, airfoil and quality of workmanship. The current record holding aircraft is the Yuri I built by the Nihon Aero Student Group, (NASG), which sustained a second flight, for 19.46 seconds, with its quad rotor design utilizing ground effect to maximize lift. Other universities have designed and built human power helicopters in different configurations ending up in mostly failures.

Rather than build a human powered helicopter, which is very costly and time consuming, the students in the engineering department, lead by **Dr. Gates** and **Dr. Lahey** have completed the design and will build test fixtures in three different configurations with the capability to adjust multiple parameters, such as, rotor blade separation distance, blade angle of twist, over all blade separation distance, blade angle of attack, and number of blades per rotor hub. The students will test each fixture configuration and adjust the parameter controlled, using design of experiments methodology, to maximize the lift to power ratio. Next the students will estimate the weight necessary to build a human powered helicopter for each configuration. With the test results and the estimated weights, the students will be able to select the best candidate for a human powered helicopter and determine the minimum amount of power required to hover in ground effect.



Human Powered Helicopter Team shown with the coaxial test fixture transmission and frame designed and built by the team.



Dr. Edward Sarisley, P.E. recently volunteered to serve as a judge of construction outcomes for the annual ConnDOT Paving Contractors awards. Shown is a recently constructed pavement that has continuing drainage problems. The ConnDOT heavy/civil contractor awards ceremony will be held in April, at the Aqua Turf of Southington.



Join the CCSU Alumni Group at:
www.linkedin.com/groupinvitation?groupID=66187
 Get a free LinkedIn account.