

CEE ALUMNI GIVE BACK TO SENIORS BY MENTORING PROJECT TEAMS IN CAPSTONE CE DESIGN II



Every year, alumni give back to the department by becoming mentors and guest lecturers for our Design II class. They are able to bring a real world perspective to our seniors so they

have a better understanding of what will be required of them when they enter the working world.

Each practitioner-mentor acts as a client to a student team of 4 people. The client will present a project and ask for RFPs to be submitted. The student teams consider feasible design approaches, assess the possibilities, and identify a plan to proceed that will lead into design.



This plan constitutes the formal response to the RFP, and it includes an assessment of risks, additional information needed to support design, construction, schedule and cost.

Each Design Project will present advanced technical aspects needed for the design. If the students haven't taken courses covering what is needed – they will need. The practitioner-mentor make themselves available for consulting on the project with his/her group, through teleconferencing, meetings, or through blogging or other electronic means.

At the end of the semester, each team prepares and presents a design report for their Project Design. The report format and content will include a clear statement of the design, considering possibilities and



identifying the selected design concept and approach, showing the design calculations, illustrating with sketches and providing drawings (in CAD) wherever necessary. We have been fortunate to have a fabulous contingent of practitioner-mentors work with us.



If you are interested in becoming a mentor or guest lecturer, please reach out to Dr. Priscilla Nelson, pnelson@njit.edu or 973.596.5864



Recent Practitioner-Mentors

AECOM

Yelena Shayer

AMERICAN WATER

Elliot Schwartz

ARUP

Peter Tillson

BERGEN COUNTY

Joseph Baladi

BERTIN ENGINEERING

David Beesley

CONTI CORPORATION

Jack Murphy

E2 Project Management

John Ferrante

QMG

George Hollenbach

HNTB

Sanja Zlatanic

JZN Engineering

Nejm Jundi

OMLAND ENGINEERING

Ted Cassera
Kiersten Osterkorn
Wayne Corsey

PARSONS BRINCKERHOFF

William Daley
Patrick Chan
Mala Ciencia
Mahir Sen
Ankita Patel

PANYNJ

Raymond Sandiford
Rupesh Sheth

THORNTON TOMASETTI

Adam Beckman
Anthony Ferraro
Matthew DeSimone
Andrew Blasetti
Anthony Massari

URS CORPORATION

Vaikunthan Navaratnam

MESSAGE FROM OUR CHAIRMAN

Dr. Taha F. Marhaba, PhD PE



Here at the Department of Civil and Environmental Engineering (CEE), our faculty, staff, students, industrial advisory board, alumni and friends continue to work together and strive to exemplify NJIT's motto "Moving the Edge". I am pleased to announce the addition of three new faculty members to our distinguished team this past fall. Dr. Michel Boufadel has joined us as Professor (with tenure) and Director of the newly established Center for Natural Resources and Protection. He received his PhD degree in environmental engineering from the University of Cincinnati in 1998. Dr. Boufadel is an expert in the field of oil spill research and currently serves on the National Research Committee studying BP's Deep Water Horizon (DWH) Blow-Out. Dr. Boufadel is a familiar face at the Environmental Protection Agency (EPA) where he currently serves on the EPA Science Advisory Board for natural gas extraction from shale formations. He was involved in the response to the DWH blowout and has received funding from the Unified Command to evaluate oil biodegradation in the Gulf of Mexico beaches following the blowout.

Dr. Wen Zhang has joined us as Assistant Professor (tenure track) in the department. He received his PhD degree in environmental engineering and science from Georgia Institute of Technology in 2011. Dr. Zhang's areas of interest include sustainable water-energy-environment systems and sustainable design and manufacturing. Before joining us, he held the position of research engineer at Georgia Institute of Technology, where he continued his doctoral research on the applications and implications of nano-materials in environmental systems. His doctoral studies focused on developing multi-disciplinary approaches to address the issues of nano-materials in the environment and were supported by the EPA's Science to Achieve Results (STAR) program. Ms. Stephanie Ribeiro Santos joined us as University Lecturer in CAD/BIM. She has obtained her BSCE from NJIT in 2007 and is currently in the final stages of her doctorate degree in civil engineering at NJIT. She is a licensed Professional Engineer, licensed Professional Planner, and certified Municipal Engineer in the State of New Jersey. She is certified in Building Information Management (BIM) from the Associated General Contractors of America and in AutoCAD 3D from Autodesk. She will be responsible for embedding CAD and BIM into the BSCE curriculum. Before joining us as University Lecturer, Prof. Santos was a Project Manager at Neglia Engineering Associates where she held that position since 2004. All three new faculty members bring to CEE a new perspective that will help us achieve our mission and vision of excellence.

Our faculty and staff continue to make exciting and significant contributions that fall within our strategic plan goals. We continue to be strong in research expenditures and seek major additional funding opportunities in strategic areas of transportation, infrastructure and environment for the coming year. We continue to sustain strong recruitment efforts in both the undergraduate and graduate programs, setting record high enrollments. We have exceeded our 2014 Strategic Plan enrollment goals in the BS program and are close to meeting the enrollment goals in our MS and PhD programs. The revamped MS face-to-face and new MSCE online programs are helping us meet our MS enrollment goals. As of Fall 2012, the BS enrollment increased to 531 students which has more than doubled since Fall 2005 (from 218 students). Our MSCE online program went into its 2nd year with two specializations; (1) Construction Engineering and Management and (2) Transportation Engineering. It is recognized among the "Top 10 Best Online Master of Engineering Degree Programs" in the nation by Brainz.org. We have also introduced a new specialty in Structural Design and Construction that will be effective next summer.

Our name is carried by our student ambassadors nationally and internationally. Our student clubs continue to work hard and achieve excellence. Our American Society of Civil Engineers (ASCE) Student Chapter Steel Bridge Team won 1st Place again, regionally. In addition, our ASCE Student Chapter Concrete Canoe Team won 1st Place regionally. Our Engineers without Borders (EWB) Student Chapter is in Haiti again to help with sustainable water and wastewater systems.

The next several years will see further expansion of our faculty and facilities as called for by our hiring and academic plans in order to sustain the demands for graduates and growing research.

We welcome you supporting the department's vision through involvement in our educational, research, and service activities and invite you to join us for the Annual CEE Awards and Commencement Ceremony at 1pm on May 20, 2013, RSVP CEE@NJIT.EDU).

A handwritten signature in black ink, reading "Taha Marhaba". The signature is fluid and cursive, with a large, stylized initial 'T'.

NEW FACULTY HIRES

Michel Boufadel, Professor



Dr. Michel Boufadel has been appointed to the faculty as Professor (with tenure) will also be directing the Center for Natural Resources Development and Protection (NRDP) here at NJIT. Boufadel is an expert in the field of oil spill research and currently serves on the National Research Council (National Academies) Committee

on the long term impact of the DWH Blowout. He was formerly a professor at Temple University, chairing its department of civil and environmental engineering.

A Professional Engineer and Professional Hydrologist, accredited by the American Institute of Hydrology, Boufadel is a familiar face at the Environmental Protection Agency (EPA) where he recently served on the EPA Science Advisory Board for natural gas extraction from shale formations.

Boufadel's projects include floodplain delineation for FEMA and predicting contamination in urban streams. He was involved in the response to the DWH blowout and has received funding from the Unified Command to evaluate oil biodegradation in the Gulf of Mexico beaches following the blowout. The findings of that project can be found in the Report of the Operation Science Advisory Team, which he co-authored. He was the report's only academic.

Boufadel has more than 80 refereed articles in publications such as *Nature*, *Geoscience*, *Water Resources Research*, *Environmental Science and Technology*, and *Marine Pollution Bulletin*. He also has more than 30 publications in oil spill conference proceedings including the International Oil Spill Conference and the Arctic and Marine Oil Spill Conference. Dr. Boufadel's office and research center are in rooms 274 Tiernan Hall and 213 Faculty Hall, respectively.

Wen Zhang, Assistant Professor



Dr. Wen Zhang has been appointed to the faculty as an Assistant Professor (tenure track). His areas of interest include the sustainable water energy environment systems and sustainable design and manufacturing. He is also interested in integrating cutting edge research from diverse disciplines into environmental science and engineering curricula.

Since his graduation from Georgia Institute of Technology (GIT) in 2011, he has worked as a research engineer in the laboratories of Drs. Yongsheng Chen and John Crittenden at GIT, where he continued his doctoral research on the applications and implications of nano-materials in environmental systems. His doctoral studies focused on developing multidisciplinary approaches to address the complex issues of nano-materials in the environment and were supported by the Environmental Protection Agency's Science to Achieve Results (STAR) program.

Zhang was a funded Fellow from the Semiconductor Research Corporation. In 2011, he received the Simon Karecki Award from the Global Research Collaboration and SEMATECH Engineering Research Center for Environmentally Benign Semiconductor Manufacturing.

Zhang has published more than 19 scientific papers in many prominent journals that include *Nano*, *Environmental Science and Technology* and *The Journal of Physical Chemistry*. Dr. Zhang's office is in room 233 Colton Hall.

Stephanie Ribeiro Santos, University Lecturer

Prof. Santos joins us as University Lecturer. She has obtained her BSCE with Magna Cum Laude from NJIT in 2007 and is currently completing her PhD degree in civil engineering at NJIT (expected this year). She is a licensed Professional Engineer, licensed Professional Planner, and certified Municipal Engineer in the State of New Jersey. She holds a Certificate of Management in Building Information Management (BIM) from the Associated General Contractors of America and AutoCAD 3D Certification from Autodesk.



She will be responsible for embedding CAD and BIM into the BSCE curriculum as well as integrating other software used in design courses into BIM. Prof. Santos has been an Adjunct Professor with us since 2008, teaching CE260 Civil Engineering Methods and CE495 Civil Engineering Design II.

Before joining us as University Lecturer, Prof. Santos was a Project Manager at Neglia Engineering Associates where she held that position since 2004. She was involved in municipal engineering work that included designing construction plans and preparing bid documents for municipal projects including roadway reconstruction/resurfacing, artificial turf fields, recreational facilities, drainage, water and wastewater infrastructure improvements utilizing the latest CAD and design software.

Her land development experience included site plans and subdivisions comprising of grading, drainage, utility, lighting, landscaping, demolition, and construction detail plans. It also included the preparation of storm water management designs and reports. She is experienced with the NJDEP Land Use Regulation Program application and approval process for Freshwater Wetlands, Flood Hazard Area and Waterfront Development permits. In addition, she is experienced in the preparation of Soil Erosion and Sediment Control plans and applications. Prof. Santos's office is in room 320A Colton Hall.

CIVIL ENGINEERING—FOR THE WIN!!

By Robert Florida, NJIT Communications



It was a sweep of the Metropolitan Regional Competitions for NJIT's civil engineering students: For the seventh consecutive year, the Steel Bridge Team won the Regional Steel-Bridge competition held Saturday, while the Concrete Canoe Team won the Regional Canoe competition on Sunday. Both teams qualified to compete in upcoming national competitions.

The win for the Canoe Team was especially impressive, since NJIT hadn't participated in the canoe competition for the last 10 years. Yet this newly revamped, 14-member team built a concrete canoe whose design and performance beat seasoned teams from Rutgers University, Stevens, The College of New Jersey and teams from five other universities.

The Steel Bridge Team has dominated the regional competition for nearly a decade but it nonetheless designed a bridge this year that was perhaps NJIT's best. The light and strong and fast-to-assemble bridge won first-place awards in the categories of design, lightness, efficiency and economy as well as first-place overall.

"I'm super-proud of both teams," said John Schuring, who advises the teams. "Civil engineering majors love working on hands-on projects. They put in endless hours of work because they love to design and build, not because they are forced to join the teams. That's the key to their success." Schuring noted that the seniors mentor the underclassmen, which results in camaraderie, team work and the passing of the torch of knowledge. That's particularly true of the Steel Bridge Team, he said, which has been competing successfully since the late 1990s, with each team learning from its predecessor and younger members on each team learning from senior members. As a result of that, he added, this year's bridge is so innovative and that the bridge team has a good chance to place at the national steel bridge competition held Memorial Day Weekend at Clemson University.

In essence, the bridge and canoe contests are where "engineering meets athletics," Schuring said. Like a baseball or a football team, the teams practice for months on executing their plans. In August of 2011 the teams received specifications from the ASCE about how to build the bridges. But there is room for creativity in the build, too, and the students spend months designing and building and practicing assembling the bridge. But in the end they must perform well under the pressure of competition, which is part athleticism and part engineering. This year, the contest was held at the New York City College of Technology in Brooklyn.

"All of us on the team feel that this has been the most rewarding experience of our lives," said Co-captain Tom Woloszyn, a

senior. "We learned to work as a team and we've become friends. We got to know our professors better and we worked closely with our company sponsors, which has led to some of us getting great jobs."

Andrew Flory, the team's other co-captain, was hired recently by Schiavone Construction Company, a long-time corporate partner (two other corporate partners who have supported the team over the last decade are Acrow Bridge and Milton Steel). Over the past year, he's worked closely with engineers at the company, who helped the team fabricate steel in its Newark plant. The company's engineers were so impressed with Flory, especially his work on the bridge team, that they hired him. "We volunteer to work on the bridge team -- we don't get class credit for it," said Flory. "We do it because we love it and that's what's allowed us to push ourselves so hard for this win. Also, the main factor in my getting the job at Schiavone was my work on the bridge team."

Given that it's a revamped team, the Concrete Canoe team did not have former team members there to support them. Nevertheless about 50 supporters gathered under tents in the drenching rain to watch the team members row its canoe across Cook's pond in Denville, N.J., the site of the contest.

NJIT placed second or third in all four categories and that's what gave them the win," said Anthony Massari, a senior engineer at Thornton Tomasetti who judged the contest. Massari, who graduated from NJIT in 2007 with a degree in civil engineering, is also a former captain of the Steel Bridge Team.

Rocco Cerami, the captain of the canoe team, said when Massari announced NJIT as the winner, he could not believe it. He was overcome with excitement and exhaustion – he had four hours sleep all weekend – and was momentarily speechless. Later, he explained how he started work on the canoe in November of 2011, at first alone and later, as interest in the canoe team grew, with dedicated teammates. He recalled how for months he and his teammates worked on the canoe five days a week for a few hours, and all day Saturday and Sunday. And how the project started out as a mere idea, then grew into a design, then into a mold and finally into the canoe that won the day.

"When the judge said NJIT was the overall winner I was in disbelief," said Cerami, a senior who also was hired by Schiavone as a result of his work on the canoe team. "I heard our name but could not believe it. It meant that all those days and night of hard work was not for nothing -- that it all paid off. I don't have the words to express how happy I am that, in the end, all the hard work paid off."



ENGINEERS WITHOUT BORDERS HAITI UPDATE

By Daniel Martins, William Pennock, Paul Rodriguez, and Allyn Luke

A team composed of three CE students, William Pennock, Paul Rodriguez and Daniel Martins and faculty adviser Allyn Luke were sent as envoys to Milot, Haiti last year to assess the current state of NJIT-EWB's Bio-Sand Filters, and to ascertain the feasibility of a new sanitation project. This assignment is a continuing part of the combined efforts of numerous NJIT's Engineers Without Borders student-members working since the project inception in 2007 to provide clean water to the people of Milot, one family at a time.

The chapter membership represents a spectrum of exceptional students from all academic backgrounds and work-experience. Last year its members made extraordinary efforts volunteering, fundraising and committing their time to a growing list of projects, great and small, NJIT-EWB is promoting. Following this trip we can report we have been successful in the primary goal of the Bio-Sand Filter project. We also report good prospects for a new, equally significant sanitation project for NJIT-EWB.

The Bio-Sand Filter has been our flagship project. Four previous trips were dedicated to the successes we were able to witness on our latest trip. The main objective on this most recent trip to Haiti was to visit the host families and inspect the physical and operational condition of the filters after two years of use. We found filters that have been in proper operation, about 1/3 of the total, achieved coliform removal rates of 95% or better. It was imperative to assure the community and ourselves that our



filter is able to reduce pathogens leading to water-borne illnesses in Milot. The filter is now proven to be an effective solution. However, it is also found that it demands constant attention from its users. Numerous problems were observed in both technical and user aspects.

Some, like the need for catching filtered water in a freshly washed bucket, were incorporated into our routine at each visit. Some of these problems, like ants, will be the subject of NJIT-EWB activities for the coming year. We also were able to test the water we, and all the hospital staff, were drinking, most were 100% coliform free, however little indications led to further cautions on how water, especially drinking water, should be handled for the hospital and staff (and us). We also tested sources all around Milot, from the market taps to the mountain springs and found most of those sources relatively clean at this time.

Promoting the entrepreneurial potential of this project was a component of our mission.

The principle behind our involvement in Milot is train our protégés to a level where they have full understanding of the Bio-Sand filter theory, construction, instruction, operation and follow-up to the point they can assume full responsibility for the project and will no longer need



our direct participation. The ultimate goal is that Haiti will have all the knowledge and resources to solve its own problems rather than be dependent on foreign aid.

The second component to this assessment trip was to survey the community by collecting data related to its sanitation practices. We set out to ask standard questions in every household of "Le Bopan" (central region of the town) and "Au-Parlait" (up the hill along the road leading to the Citadel). From these exchanges, it was discovered that the greatest issue facing the community is not whether a latrine is available or not but rather how the waste is managed, after removal. The consensus is that anonymous persons working secretly by night (lest their identities be known) will dig out a family's pit for reuse. At this stage, for lack of a proper sewerage facility, the collected waste is discarded in randomly excavated holes liable to contaminate the ground water – drinking water for someone else. This common practice poses grave dangers to human health and the ecosystem.

The recent 2010-2011 cholera outbreak in Haiti that claimed more than 6,000 lives and affected 300,000 others is due to lack of competent sewerage systems. For this reason, the team set out to find a solution that will work in the long-term. Our objective is to mitigate water pollution, reduce health-related complications, and eventually provide an incentive to the community for cleaning up sanitary waste.. On this trip we made strides to offer the community specific alternatives like composting waste. We arranged a community meeting of over 100 to attend a sanitation presentation. In the future, a facility managed by SOIL (Sustainable Organic Integrated Livelihoods) will collect waste to compost and use its humus product as soil conditioner that will benefit its privately-owned plantation of corn, carrots, tomatoes, radish and more. This operation seeks to establish a market that will capitalize on the prospective use of fertilizer as a profitable business opportunity.

We were greatly encouraged by people we met on the streets, the other members of "Team Fletch", the Hopital Sacré Couré doctors and staff, CRUDEM (our hosts) and filter owners to continue our efforts. Our work is appreciated.

Faculty and Staff Honored at the 14th Annual Salute to Engineering Excellence Awards

NCE Outstanding Staff Award : **Heidi Young**

Saul K. Fenster Innovation in Engineering Education Award : **Janice Daniel**

NCE Excellence in Advising Award : **Walter Konon**



Pictured (l-r): Dr. Taha F. Marhaba, CEE Chairman, Mrs. Heidi Young, Dr. Janice Daniel, Prof. Walter Konon

Asim Zaman wins Second Place at the Newark Innovation Acceleration Challenge

NJIT hosted the annual **Newark Innovation Acceleration Challenge**, a student entrepreneur contest co-sponsored by Capital One Bank, last Fall. During the Challenge, individual students from Newark-based universities presented their business plans. A panel of Capital One bankers, investors and venture capitalists evaluated the presentations and selected three winners. CEE student Asim Zaman, took second.



For winning the Challenge, Asim received a \$3,000 fellowship from Capital One Bank. The fellowships will pay for their teams to spend the summer in NJIT's EDC, where they'll further develop their projects. The EDC houses 90 start-up companies, many of which were founded by NJIT alums.

Zaman's IDS team is designing fuel cells to convert household garbage and organic waste into electricity. Along with Zaman, the team is comprised of two biology majors and a mechanical engineering major. Each team member works on a part of the project that concerns his or her major. Zaman, focuses on installing the electrical system in households. The mechanical engineer designs the mechanics and the two bio majors study catalysts that breakdown organic waste. All four students work together on developing their business plan. The team is mentored by Leon Baptiste, an NJIT graduate (1991, electrical engineering,) who is president of LB Electric, a firm located in the EDC at NJIT. The team has a patent pending for its technology.

The Interdisciplinary Design Studio, a research and entrepreneurship program, is run by the Albert Dorman Honors College

Patricia DiJoseph, PhD student, Received the Pignataro Memorial Transportation Engineering Education Award



Patricia DiJoseph received the Prof. Louis J. Pignataro Memorial Transportation Engineering Education Award, presented by the Institute of Transportation Engineers (ITE), The Metropolitan Section of New York & New Jersey. The award is in recognition of her outstanding academic performance, research, teaching, and contributions to the transportation engineering profession.

Ms. DiJoseph is a doctoral candidate and research assistant in the Interdisciplinary Program in Transportation. Her dissertation topic is Optimization of Automatic Vehicle Identification Sensor Spacing for Travel Time Prediction under Congestion. Ms. DiJoseph earned a 4.0 GPA in her graduate course work at NJIT, was the president of NJIT's ITE Student Chapter, and taught an undergraduate Civil Engineering course.

Outstanding Senior Selected To Carry The NCE Ganfalon at the 2012 Commencement Ceremony



Luz Angela Zidziunas is the top-ranked student in the senior class, with a perfect 4.0 GPA. But what's more impressive about her is this: she's also a mother of three children who, along with her husband, co-owns of an environmental consulting company.

How does she manage to juggle all that work -- domestic, academic and professional -- and still get a 4.0?

For one, she didn't start her academic career at NJIT. Born in a small town in Colombia, she first attended a university there. She soon realized, though, that she wanted to attend an American University -- that was her dream. So she left Colombia for America and lived in New Jersey, where she worked for a few years while attending Hudson Community College. After earning her associate's degree in Engineering Science, she enrolled at NJIT. Given her interest in structural design and environmental science, she majored in civil engineering. She was fortunate, she says, to find great civil engineering professors at NJIT who encouraged her to pursue her passions.

In her junior year, she applied to the Albert Dorman Honors College, which accepted her with a scholarship. She also became a member of the Chi Epsilon Honor Society for civil engineering, Tau Beta Pi, the national engineering honor society, and the American Society of Civil Engineers (ASCE). As a member of the NJIT Steel Bridge Team, she placed first in the Regional ASCE Steel Bridge Competition for presenting the team's technical paper. And last month, the Newark College of Engineering (NCE) named her the Outstanding Senior in the Department of Civil & Environmental Engineering.

Outside of school, she and her husband, Rhett, co-own Joseph Environmental, an environmental consulting firm in Newark. The firm, which focuses on remediation of hazardous material, has done environmental work for the City of Newark, removing lead paint from residential homes. The firm's work has reduced the potential for lead poisoning in children.

Luz Angela will graduate in May and was chosen by NCE to carry its gonfalon, a banner bearing the college shield, during NJIT's graduation ceremony. Carrying the gonfalon is an annual honor given to a student who NCE feels most epitomizes its academic mission.

After she graduates, she intends to enter a master's degree program in civil engineering, with a focus on structural and environmental engineering. Recently, Tau Beta Pi awarded her a fellowship for graduate school. The fellowship includes a scholarship that will help pay her tuition. In graduate school, she aims to design structures that are environmentally sustainable.

"I want to do designs based on a sustainable approach," says Luz Angela, "making sure that I choose cost-effective materials that also preserve the environment."

(By Robert Florida)

Zachary Marinelli Receives \$2000 Scholarship from the Concrete Industry Foundation



Zachary Marinelli, currently a senior, received a \$2000 scholarship to further his education from the Concrete Industry Foundation. One of 9 students from eight local universities who will receive the \$2000 scholarship, Mr. Marinelli received his award from CIF at a luncheon at the New York Athletic Club.

The Concrete Industry Foundation is an educational and research fund that fosters excellence in design and construction through a scholarship and grant program for study in the concrete built environment.

Founded in 1993 with its first scholarship awards made in 1996, the CIF has awarded a total of \$259,000 to 136 students.

Department of Civil & Environmental Engineering Collaborates with UMDNJ

In collaboration with the Dental School (NJDS) at UMDNJ, NJIT's Department of Civil & Environmental Engineering (CEE) has been examining the mechanics of dental prostheses. Starting with some finite element modeling in 2000, the CEE Department has maintained an on-going research relationship with the Department of Restorative Dentistry at UMDNJ.

Working from our experience in materials testing using servo-hydraulic testing machines, what started as simply instruction and assistance setting-up and using UMDNJ's unique MTS Chewing Machine, our collaboration with UMDNJ expanded to studies applying an aerospace technology, Torque-Angle Signature (TAS) Analysis, to the study of the mechanics of bolted dental implant assemblies and the use of ceramics in dental prostheses and the clinical implications of the results.

Knowledge derived from those studies with CEE have led to the submission of a problem statement to NJDOT for consideration of TAS to the investigation of the loosening of the bolted connections holding large cantilevered highway signs into concrete.

With the help of the CEE Department machinist, an Excel-based torque-angle measurement/data-acquisition and logging system for the study of Dental Implant Screws was fabricated. This set-up was significant enough for the paper to be receive the *Academy of Osseointegration's* 2008 Annual Research Award.

Several studies pairing TAS with million-cycle load testing, approximating one year of use, were done in the Department of Restorative Dentistry with support from CEE's Allyn Luke with Dr. Weiner, and former Department Chair Dr. Robert Flinton, Dr. Hoda Yousef, and others at UMDNJ. Experimental devices and multichannel data-acquisition were implemented to study differences in perception of biting forces between natural teeth and implants in a clinical setting. Strain gage analyses of dental bridges supported by implants were also performed to analyze the support necessary for clinical success.

Publications have resulted from these studies listing Allyn Luke, NJIT CEE Department member as collaborator.

- Yousef, H., Luke, A., Ricci, J., Weiner, S., **Analysis of changes in implant screws subject to occlusal loading: A preliminary analysis.** *Implant Dentistry* 2005 14 (4).
- Piermatti, J., Yousef, H., Luke, A., Mahevich, R., Weiner, S., **An in vitro analysis of implant screw torque loss with external hex and internal connection implant systems.** *Implant Dentistry* 2006 15 (4) , pp. 427-43.
- Hsieh, W.W., Luke, A., Alster, J., Weiner, S., **Sensory discrimination of teeth and implant-supported restorations.** *The International journal of oral & maxillofacial implants* 2010 25 (1), pp. 146-152.

- Dhingra A, Luke A, Weiner S, **The International journal of oral & maxillofacial implants** 2010 25 (1), pp. 146-152. **Analysis of dimensional changes in the screw and surface topography at the interface of the titanium screw and zirconia abutment with cyclic loading.** *The International journal of oral & maxillofacial implants* 2012 accepted for publication.

CEE has been participating on the Research Committee of the Dept. Restorative Dentistry Research Committee, with Acting Chairman Dr. Louis DiPede, former chair Dr. Robert Flinton, Dr. Saul Weiner, Dr. Hoda Yousef, and several other of the Faculty reviewing student protocols and proposals, as well as critiquing thesis and final presentations prior to acceptance of Masters Thesis. This interaction has been instructive in that our outlook is highly mechanical, whereas the dental research method is highly statistical.



CEE's Allyn Luke has served as a thesis advisor for the following Master's students in the Department of Restorative Dentistry at NJDS.

- Dr. Ajay Dhingra, 2009, Analysis of dimensional changes in the screw and surface topography at the interface of the titanium screw and zirconia abutment with cyclic loading.
- Dr. Rakan Baaj, 2010, Hoop strains in dental implants and the influence of different cantilever lengths
- Dr. Priya Tonseker, 2010, The effects of platform switching on abutment stability
- Dr. Yasser Allali, 2011, The effect of the abutment/implant connection interface on the strain around the dental implant.
- Dr. Bernadette Sawa, 2011, Sensory Discrimination of Implants
- Dr. Ashwini Bhawe, 2012, Comparison of shear bond strength of feldspathic porcelain with metal, zirconia, and lithium disilicate - an in vitro study

A recent application to upgrade the MTS System 810, the Chewing Machine, with a state-of-the-art digital controller is under consideration by the Saudi Education Ministry for the Dental Materials laboratory at NJDS. CEE's testing expertise is a key to securing this funding.

Recently, CEE has assisted researchers in the UMDNJ Department of Orthopedics upgrade their MTS TestStar controller, to a specialized modern computer with the requisite hardware.

CEE continues to seek further collaborations with UMDNJ to further interdisciplinary research among the two institutions.

2012 CEE EXCELLENCE AWARD RECIPIENTS

The CEE Department held its Third Annual Graduation Celebration and Awards Ceremony on May 15, 2012. We honor all the 2012 department graduates and present the Annual CEE Awards to students and alumni. This year's recipients were:

FIRST YEAR STUDENT

EXCELLENCE AWARD:

Michael Vitello



SOPHOMORE

EXCELLENCE AWARD:

Asim Zaman



JUNIOR

EXCELLENCE AWARD:

Jay Patel



SENIOR

EXCELLENCE AWARD:

Shu Tham



MASTERS

EXCELLENCE AWARD:

Paul Rodriguez



DOCTORAL

EXCELLENCE AWARD:

Shabnam Darjani



STUDENT LEADERSHIP AWARD:

Rocco Cerami



STUDENT LEADERSHIP AWARD:

Andrew Flory



2012 CEE EXCELLENCE AWARD RECIPIENTS (cont.)

WILLIAM KILLEEN RECEIVES DISTINGUISHED ALUMNI AWARD



Bill's career path to professional success is a compelling one. In 1977, he began working as an engineering intern for the Acrow Corporation, while simultaneously pursuing his baccalaureate studies part time here at NJIT. Upon graduation in 1983, Bill continued with Acrow and worked his way up through the firm, eventually being named President in 1995.

Several years later, Bill, in partnership with his brother, purchased a controlling interest in Acrow, and the rest is history. Under his leadership Acrow has become the premium manufacturer of prefabricated modular steel bridges within the U.S and around the world. Headquartered in Parsippany and with a manufacturing facility in Milton PA, Acrow has offices in Golden, CO, Mobile, AL, Toronto, Ontario, and Vancouver, British Columbia. Acrow's bridges can be found just about everywhere, including in every state of the U.S. and in many countries around the globe. The company specializes in fast track projects working under the difficult of conditions, like when they restored I-10 in New Orleans in just a matter of days during the aftermath of Hurricane Katrina.

Bill's dedication to improving prefabrication technologies has another very worthy goal: to help developing countries improve their transportation systems. Acrow bridges are currently being built throughout Africa, and also in places like Concepcion, Chile, as part of the emergency relief from February 2010's devastating earthquake.

In addition, we applaud the philanthropy of Bill and the Acrow Corporation. For example, they are the longest corporate supporter of our ASCE Steel Bridge Team. Each and every year they donate time, materials and travel funds so that our students can compete in regional and national competitions. Their support has played a major role in the Team's incredible record of winning Metro Region championships. Acrow is also involved with a number of other charitable organizations like the Cadence Cycling Foundation, which does wonderful work by providing sport cycling opportunities to the inner city youth of Philadelphia. Once the kids get involved, the Cadence Foundation also guides them thorough the college admissions process, greatly increasing the number who go on to higher education.

CHRISSA ROESSNER RECEIVES DISTINGUISHED YOUNG ALUMNI AWARD



Chrissa Roessner graduated with her BSCE in January 2002. She began her career as a highway and bridge design engineer with the Louis Berger Group. She graduated with an MS in Structural Engineering at Rutgers in January 2004. At that time, she decided to resign her position, taking an indefinite sabbatical that she refers to as her quarter-life crisis. She spent a year and a half volunteering, working, studying, and traveling abroad. Her travels took her all over Eastern and Western Europe, Asia, and the South Pacific.

When she returned to New Jersey, Chrissa returned to work for the Louis Berger Group. She attained her Professional Engineering license in New Jersey, and before long, was leading some of the engineering efforts associated with the design of transportation infrastructure projects for the NJ Turnpike Authority, NJ Department of Transportation, and NJ Transit. Chrissa was also actively involved in professional organizations such as ASCE and SWE, and maintained a relationship with NJIT, even visiting as an adjunct professor for CEE in 2006.

Earlier this year, Chrissa transitioned her career from the private sector to the public sector when she accepted a position with the NJ Department of Transportation, Region North Construction and Materials as the Regional Construction Engineer. Region North is responsible for administering the Capital Program for the northern eight counties of New Jersey. The total Construction Program for NJDOT is estimated to be \$1 billion annually; Region North administers approximately 40 percent of the total construction program in approximately 70 active construction projects. Chrissa oversees a State staff of 140 construction and materials employees, as well as 125 consultant staff. She is licensed in six states and has a MBA in Finance and a MS in International Business, both from Seton Hall University.

MSCE ONLINE Now Offers Specializations in Construction Engineering & Management and Transportation Engineering

Two years ago the CEE Department launched the **MS Civil Engineering Online Program**. We have students studying from many different states including California, Ohio, Arizona and Texas. We have now fully converted two specializations, **Construction Engineering & Management and Transportation Engineering** to our online format.

The online MSCE offers instruction and learning opportunities with the convenience and flexibility of online delivery -- so students can continue to work while going to school. Even if you still reside in New Jersey, you do not have to bear the inconvenience of getting to campus for traditional evening classes.

We are also introducing a third specialty in Structural Design and Construction that will begin this summer.

The program also offers a reduced tuition rate for out of state students. There is a \$243.00 per credit discount which amounts to a savings of \$729.00 per course.

For more information, go to: <http://engineeringmasters.njit.edu>.

2012 SCHOLARSHIP RECIPIENTS

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Donald R. Hunter Memorial Scholarship

Brian VanNortwick

Frank Gallagher Memorial Scholarship

Jay. J. Patel

George & Robert Schmidt Scholarship

Tom Woloszyn

Shea Memorial Scholarship

Asim Zaman

Turner Construction Company Scholarship

Mouhamadou Ndiaye

Christian Peter

Dan Snyder

Michael Rovinsky

Gina Issa

Jordan Cecinini

Turner Golf Classic Construction Scholarship

Tyler Golz & Chris Vanderfliet

Turner Construction Co. Construction Management Scholarship

Andrew Flory

Rocco Cerami

Construction Industry Advancement Program Scholarship

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Michael Pugliese Amer Hamad

Nikola Dukleski Asim Zaman

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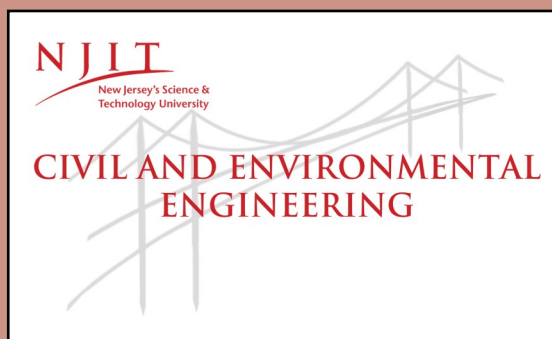
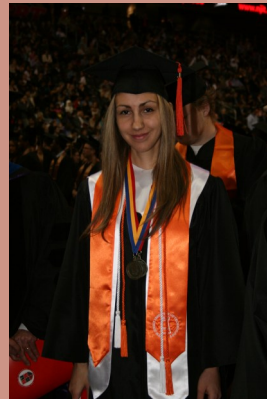
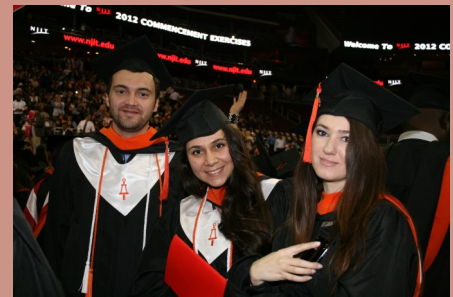
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HIGHLIGHTS FROM 2012 COMMENCEMENT AND CEE AWARDS CELEBRATION



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