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Civil & Environmental Engineering
Louisiana State University
3418 CEBA Building
Baton Rouge, LA 70803-6405

Civil and Environmental Engineering

Message from the Chair

Dr. George Z. Voyiadjis

I am delighted to report to you through this newsletter some recent highlights from the Department of Civil and Environmental Engineering (CEE).

We have two major challenges at this juncture. First, and most important, to successfully complete the ABET accreditation process. Second, is to over-come budget constraints. The ABET process requires that we are engaged in the continual improvement of our undergraduate programs in civil engineering and environmental engineering and provide documentation that a process is in place to ensure such a goal is achieved. The budget requires that we more actively seek to supplement University and traditional research grant income sources.



Our department undergoes a continuous process of re-evaluation that leads to development and improvement of its Undergraduate Curricula. Changes may require eliminating, modifying, adding or combining courses. Changing curricula to address advances in technologies takes place in an environment which recognizes that a significant number of students who enroll as freshman do not graduate as engineers, which represents a loss of future problem solvers for society. As we develop our curricula, we are cognizant of our mission of producing future leaders who are adequately prepared at their first job and can creatively apply thereafter their basic knowledge. An important aspect of the whole curriculum review effort is to make the use of information technology an integral part of the teaching and learning processes. As the computer provides added capability in the hands of the students, we should effectively exploit it in their learning process. The curriculum review process involves reexamining the tight compartments that have slowly grown within civil and environmental engineering *as well as within* other engineering branches. We need to carefully and continually assess what we want our graduates to know at the time of graduation and also at the end of each course.

The departmental advisory committee consisting of stalwarts from Government and Industry (a number of them are LSU alumni) is asked to play an advisory role to the CEE Department in evaluating and suggesting possible changes in the curricula of the and helping formulate future directions for the department. A second task for the advisors is to help formulate directions and organize sponsorship of various kinds for the department.

Based on faculty research interests the following academic/research groups exist in the CEE Department:

- Environmental and Water Resources Engineering Systems
- Geotechnical and Geophysical Systems
- Geodesy and Geoinformatics
- Intelligent Transport Information Systems
- Material Modeling and Visualization
- Structural Engineering and Infrastructure Systems, and Mechanics

The objective of our research-oriented programs is to find effective solutions to the problems currently faced by the profession and then to predict the issues that may challenge the profession in the future. In the process, we will be educating individuals who are equipped to effectively respond to such challenges. The CEE graduate programs are faced with the continuous challenge of securing adequate laboratory and space resources, computing facilities, and basic instrumentation to support the faculty's effort to pursue sponsored research funding.

The CEE faculty is making vigorous efforts to undertake collaborative research within the department cutting across the specialization areas, within the college across different fields of engineering, across the different departments/colleges in the university, and across universities. These efforts reflect the interdisciplinary nature of present day research efforts and help to attract sponsored research proposed by interdisciplinary research teams and industrial partnerships.

Civil and Environmental Engineering Departmental Advisory Committee

Ara Arman, P.E., Professor Emeritus
Senior Vice President, GEC Inc.

Dr. Dean McKee, P.E., President
McKee & Deville Consulting Engineers, Inc.

Dr. Gordon P. Boutwell, P.E., President
Soil Testing Engineers, Inc.

Dr. Kam K. Movassaghi, P.E., Secretary
Louisiana Department of Transportation &
Development

Dr. Jim Coleman, Boyd Professor
Oceanography and Coastal Sciences
National Academy of Engineers Member

Ronald Rodi, P.E.
CSRS

Ron B. Crum, P.E.
URS Radian Corp.

Michael W. Salmon, P.E., President
Salmon and Associates, Inc.

Craig Gardner, P.E.
URS Radian Corp.

Ann Trappey, P.E.
Forte and Tablada

Randy Hollis, P.E., President
Owen and White, Inc., Consulting Engineers

Peter Wilson, Vice-President
Barriere Construction Co., LLC

Falcolm E. Hull, Program Manager
Planning, Programs and Project Management Division
US Army Corps of Engineers – New Orleans District

Dr. Song Kai Yan, Ph.D., P.E.
Senior Staff Consultant
IT Corporation

Each issue will feature the activities of a research group in the department.

Activities of the Environmental Engineering Faculty

The Environmental Engineering faculty is actively engaged in research activities with a local, regional and national focus. The research enterprise within the Environmental group supports nearly 50 people including graduate students, post-doctoral associates and support personnel. The research effort attracts several million dollars of external funding annually, much of it repeat business from satisfied sponsors. Sponsors include national entities such as the Department of Defense, Environmental Protection Agency and the National Sea Grant. Environmental engineering researchers are also addressing local and regional problems for entities such as East Baton Rouge Parish, the Louisiana Department of Environmental Quality and the Baton Rouge Parks Commission. Thumbnail sketches of some current research projects are presented below.

Dean Adrian, Rubicon Professor of Civil and Environmental Engineering, conducts research on water resources, hydrology and water quality modeling. One of Dr. Adrian's current projects is investigating the factors causing the formation of dangerous "sand boils", underground conduits for floodwaters that can lead to the failure of levees. The research, funded by the US Army Corps of Engineers, is investigating whether there is a cumulative deterioration of levees due to undermining by sand boils, increasing the risk of failure of flood protection systems in flood prone areas of the country.

David Constant, Professor of Civil and Environmental Engineering, conducts research on the fate and transport of chemicals in the environment and the design of remediation systems. One of Dr. Constant's current projects is investigating fate of contaminants at one of the largest Superfund sites in the nation. The research, funded by the US Federal Court, is leading to better understanding of the natural recovery and remediation of impacted ecosystems and the buffering that natural vegetation provides.

Ron Malone, Chevron Professor of Civil and Environmental Engineering, conducts research on aquaculture, water quality and wastewater treatment. One of Dr. Malone's current projects is developing an engineering approach for the cultivation of red drum, one of the most commercially valuable and overfished marine species in the region. The research, funded by the National Sea Grant, is leading to the development a self-contained red drum

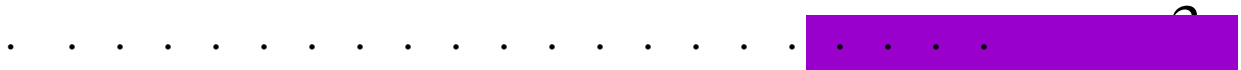


LSU Senior Keegan Roberts shows off the reactor he uses to grow microorganisms capable of degrading methyl ethyl ketone as part of an undergraduate research project



Bead Filters at a Large Midwestern Tilapia Facility (Malone et al)

Continued on Page 4



cultivation system using state of the art recirculating filters developed by Professor Malone.

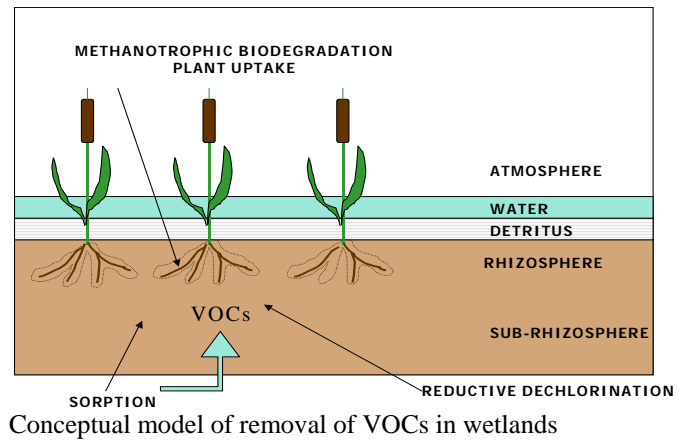
Bill Moe, Assistant Professor of Civil and Environmental Engineering, conducts research on biological treatment of air streams and wastewaters with an emphasis on unsteady-state processes. One of Dr. Moe's current projects is development of enhanced biological treatment processes for contaminated air generated during painting and maintenance of military aircraft. The research, funded by the US Air Force, is leading to a cost-effective "biofilter" approach to minimize air pollution emissions at our Nation's military installations.

John Pardue, Associate Professor of Civil and Environmental Engineering and Elizabeth Howell Stewart Professor, conducts research on the fate and transport of chemicals in wetlands. One of Dr. Pardue's current projects is investigating the remediation of contaminated sediment using wetland plants. The research, funded by the US EPA's Hazardous Substance Research Center, is leading to cost-effective remedial technologies for the high volumes of contaminated sediments present in the nation's harbors and estuaries.

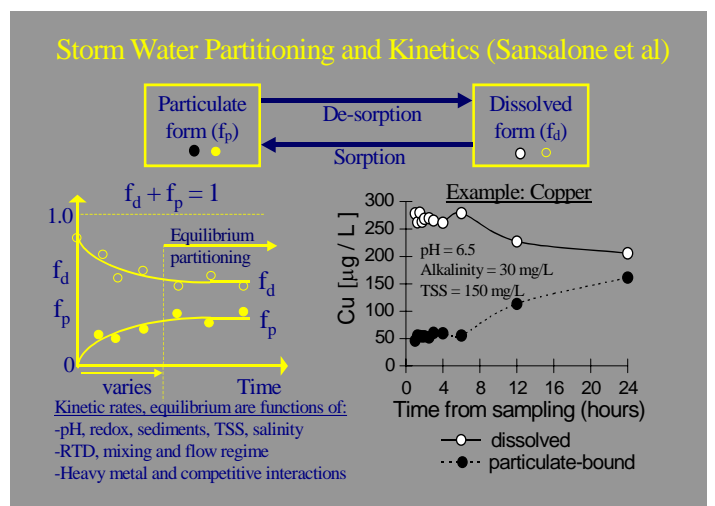
Kelly Rusch, Associate Professor of Civil and Environmental Engineering and Formosa Plastics Professor, conducts research on lakes modeling, aquaculture and ecological infrastructure. One of Dr. Rusch's current projects is developing a natural treatment system for domestic wastewater in coastal dwellings. The development of the Marsh Upwelling System, funded by the Department of Environmental Quality and several other agencies, has resulted in a low-cost solution for treatment of wastewater in coastal regions, leading to protection of shellfish grounds in these areas.

John Sansalone, Assistant Professor of Civil and Environmental Engineering and Louisiana Land & Exploration Professor, conducts research on the treatment of urban stormwater, hydrology and wastewater treatment. One of Dr. Sansalone's current projects is investigating the treatment of heavy metals in urban stormwater. The research, funded by the US Geological Survey and the US Environmental Protection Agency, is leading to highly effective passive technologies for treating the contaminated storm water from our nation's highways.

More information on these projects and researchers can be obtained by contacting the researchers through the Department of Civil & Environmental Engineering at 225-578-8442.



I-10 bridge at City Park Lake integrated with urban ecological system. The research site is located beneath the abutment to the right of the picture. (Sansalone et al)



Research Funded

Dr. Donald D. Adrian, Dr. Vijay P. Singh, and Dr. John H. Pardue, “*Cumulative Effects of Flood Induced Seepage on Piping Problems Associated with Levee Failures: Experimental and Analytical Modeling for Risk Assessment*”, Army Corps of Engineers, \$29,212.

Dr. R. Richard Avent, Dr. Mohamed A. Alawady, and Dr. Charles A. Harlow, “*Grout Injection for the Repair of Utility Poles*”, Entergy Corporation, \$9,841.

Dr. Enrique E. Matheu and Dr. E. J. Macari, “*Analysis and Evaluation of the Nonlinear Response of Concrete Gravity Dams Under Seismic Excitations*”, Army Corps of Engineers, \$100,929.

Dr. John B. Metcalf, “*Implementation of Findings from the Full-Scale Accelerated Loading Experiment*” Louisiana Transportation Research Center, \$23,990.

Dr. Louay Mohammad, Principal Investigator, “*Influence of Asphalt Tack Coat Materials on the Interface Bond Strength*”, Federal Highway Administration, 7/1/01 – 12/30/02, \$90,675.

Dr. Kelly A. Rusch and Dr. Ronald F. Malone, EIEL, “*Searching for Optimum Composition of Phosphogypsum: Fly Ash: Cement Composites for Oyster Culch Materials*”, Gulf Coast Hazardous Substance Research Center, \$23, 297.

Dr. Joseph N. Suhayda, “*FY 2001 Application for S104 of the Water Resources Act Year 01 Funding*”, Geological Survey, \$75, 321.

Dr. Joseph N. Suhayda and Ms. Nedra Korevec, LWRRI, “*Technical Assistance for Louisiana Rural Watershed Issues*”, Mississippi State University, \$7,500.

Dr John Sansalone, Cartledge, F. K. and Tittlebaum, M.E., “*Leaching and Stabilization of Solid-Phase Residuals Separated By Storm Water BMPs Capturing Urban Runoff Impacted By*

Transportation Activities and Infrastructure”, UWMRC/USEPA, \$179,800.

Dr. Mehmet T. Tumay, Murad Y. Abu-Farsakh, “*Inclined Piezocone Penetration Aspects – Theoretical Interpretation and Experiment Verification*”, National Science Foundation, \$172,312.

Dr. Mehmet T. Tumay, “*US-Turkey Workshop: Geotechnical Engineering Research, Istanbul, Turkey, September 2001*”, National Science Foundation, \$37,000.

Dr. George Z. Voyiadjis, “*Active In-flight Damage of Fuselage and Remaining Life Assessment*”, LaSPACE/ A NASA Space Grant Program, Co-PI/PD: Dr. Y.M. Ram, 7/1/01-6/31/02, \$15,215.

Dr. George Z. Voyiadjis, “*Damage in Materials due to Impact Loading*”, AFIT/ENY (DOD), 7/1/01-6/31/02, \$20,000.

Dr. George Z. Voyiadjis, Principal Investigator, Project Director, “*Probing Micro-Scale structures via a Three-Dimensional Optical Profilometer*”, Board of Regents Support Fund – Enhancement, Co-PI/PD: Drs. J. B. Lee, E. J. Podlaha, W. J. Meng, M. M. Khonsari, M.C. Murphy, and J. Gottert, 4/1/01-3/31/02, \$77,100.

Presentations/Classes

Hird, J., Cartledge, F. K., Tittlebaum, M.E. and Sansalone J.J., “*Passive Treatment of Elevated Roadway Runoff Over Coastal Waterways Using Upflow Clarification Technology*”, 4th International Conference on Innovative Technologies in Urban Stormwater Drainage, GRAIE, Lyon, France, June 2001 - Sansalone, presenter.

Glenn, D. W., Tribouillard, T. and Sansalone J. J., “*Management of Pollutant Mass and Physical Particulate Pollution as a Function of Particle Size for Urban Snow Runoff*”, 4th International Conference on Innovative Technologies in Urban

Stormwater Drainage, GRAIE, Lyon, France, June 2001 – Sansalone, presenter.

Dr. Louay Mohammad developed and conducted twelve Superpave Mix design training classes between January 2001 and April 2001. A total of 245 participants attended these courses representing DOTD, contractors, materials suppliers and consulting engineers.

Dr. Louay Mohammad, Huang, B., Cea, M., “*Rutting Measurements of HMA Mixtures with the Asphalt Pavement Analyzer.*” Presented at the 2nd International Symposium on Maintenance and Rehabilitation of Pavements and Technological Control, Auburn, Alabama, July 29-August 1, 2001.

Dr. Louay Mohammad., “*The Application of Intrusion Technology in Flexile Pavement Design.*” Presented at the Cone Penetration Testing Technology Seminar, Baton Rouge, LA March 26-27, 2001, Alexandria, LA, March 28, 29, 2001. (Invited Speaker).

Dr. J. B. Metcalf was invited to present the opening paper “*Applications of Accelerated Load Testing – a Global View*” at the meeting of COST 347 at the German Road Transport Research Center in June 2001.

International Sessions Chaired

Dr. John Sansalone, Session Chair, “*Storm Water Databases and Applications*”, Session at the 4th International Conference on Innovative Technologies in Urban Storm Drainage, GRAIE, Lyon, France, June 2001.

Dr. Louay Mohammad, Chair of Technical Session, “*AR-HMA Mixture Properties,*” Asphalt Rubber 2000 Conference, November 14-17, 2000, Vilmoura, Portugal.

Dr. Louay Mohammad, Member, International Advisory Committee and International Technical Committee, International Conference on Advances in Civil Engineering – 2002, January 3-5, 2002,

Department of Civil Engineering, Indian Institute of Technology, Kharagpur, India.

Graduate Students

Jonathan Hird who graduated with his M.S. degree in May 2001 has accepted a position as Project Engineer with FTN & Associates, Ltd., a Water Resources and Environmental Engineering company in Baton Rouge, LA.

Jarrod Tramonte who defended his M.S. thesis in August 2001 has accepted a position as Project Engineer with Montgomery-Watson in Baton Rouge, LA.

LWEA Prepares for Fall 2001

Welcome back to LSU! Meetings for LWEA (Louisiana Water Environment Association) will be held every other Wednesday in 2408 CEBA from 12:30 - 1:30 PM. Upcoming dates include Oct 3, Oct 31, Nov 14, and Nov 28. Food and beverages are provided at the meetings. At the first meeting on September 5, 2001, LWEA elected new officers and set a semester agenda that focuses on professional involvement particularly through LSU alumni. Send an email to lwea@lsu.edu, this will ensure you are on the email roster.

The LWEA meetings are open for all students and faculty who are interested in Louisiana environmental issues, the Louisiana environs, and interactions between the natural and constructed Louisiana environments. LWEA, this semester, will predominately focus on networking with professionals and the professional civil/environmental, environmental and water resources companies, industries and agencies in Louisiana. A primary goal of LWEA this year is to encourage interaction and networking between the professional community in Louisiana and LSU students who are preparing to become part of the Louisiana professional engineering and science community.

Undergraduate Programs

Roger K. Seals, Coordinator
Undergraduate Programs

The undergraduate programs in civil engineering and environmental engineering are undergoing extensive assessment and evaluation in preparation for their accreditation visits by teams from the Accreditation Board for Engineering and Technology (ABET) in Fall 2003. Drs. John Metcalf and W. David Constant are providing leadership for these activities in civil engineering and environmental engineering, respectively. The Department has adopted a continual improvement model to guide the assessment and evaluation efforts that encompass: establishment of program education goals and student outcome objectives consistent with the ABET accreditation criteria; assessment of the performance of the program and the students; evaluation of the assessment data; and identification and implementation of needed improvements in the program. The concept is to “close the loop” that starts with goals and objectives and ends with the implementation of needed improvements.

A vital element of this process is to involve the professional community at all stages of the process. To this end, the Department has organized the Civil Engineering and Environmental Engineering Program Advisory Committees (CPAC and EPAC, respectively). To provide an appropriate cross section of the respective disciplines, the members of these committees have been drawn from consulting firms, public agencies, and industry. Individuals serving on these committees are listed below:

CPAC:

Lane Grigsby, Chairman
Cajun Constructors, Inc.

Blaise Carriere, P.E., Deputy Secretary, LA Dept.
of Transportation and Development

Michael N. Dooley, P.E., Vice President, Sigma
Consulting Group, Inc.

Robert L. Cangelosi, Jr., P.E.
Site Development Manager
SJB Group, Inc.

Christopher P. Knotts, P.E.
Louisiana Department of Natural Resources,
Coastal Restoration Division

Gordon P. Boutwell, Ph.D., P.E., President
Soil Testing Engineers, Inc.

EPAC:

Laura T. Morrow, P.E., Supervisor
Environmental Planning Section
Exxon Mobil Chemical

Bob Brady, Senior Environmental Specialist,
DOW Chemical

Alex B. Sheffield, P.E.
Arcadis Geraghty & Miller, Inc.

Mary Field, P.E., President
Compliance Consultants Inc.

James Brent, Assistant Secretary, LA Department
of Environmental Quality

Craig Gardner, P.E., Vice President
URS Corporation

Charles Demas
Water Resources Division
US Geological Survey

The assessment process involves both internal and external surveys of performance with respect to the stated objectives of the program. The external surveys will consist of questionnaires to be completed by former students and their employers. Plans are being made to conduct the surveys via a website that will be developed for this specific purpose. The next Departmental newsletter will provide information on how former students and their employers can access the site and complete the survey.

Getting Started with ASCE in the New Semester

Welcome back Students and Faculty. We hope you had a great summer break. The American Society for Civil Engineers (ASCE) is an organization in which the students and faculty can network and socialize. Students are given the opportunity to meet with professional engineers and engineering companies who speak at the meetings. Our meetings are held every other Thursday at 6:00 pm. Students are made aware of job opportunities, internships, and co-ops in the Civil Engineering field. ASCE encourages its members to participate in a number of activities throughout the year such as the Concrete Canoe, Steel Bridge Design, and intramural sports. The meetings are also a great way for the faculty to get feedback from the students about classes, class schedules, curriculum and interests. As always, food and drinks will be served at every meeting.

The new officers for the year are President-Melanie Lestelle, Vice President-Kathryn Rhea, Secretary-Lisa Rodriguez, Treasurer-Denise Authement, Publicity Chair-Adrienne Breaux, Intramural Sports Chair-Geoffrey Wilson, Concrete Canoe Co-Chairs-Denise Authement and Keith Hoffman, and Steel Bridge Chair-Gerard Doyle. Student membership dues are \$35, which includes an ASCE T-shirt. Also, once you have paid student chapter dues, the national chapter membership is free. You can register for the National Chapter of ASCE on-line at www.ASCE.org. The student chapter's website can be found by using the student organization's link on the Civil Engineering department's website which is www.ce.lsu.edu. Click on Student organizations and then ASCE. Events during the fall semester include ASCE tailgate party on October 27 after the fundamentals exam and before the LSU vs. Ole Miss game. In conjunction with the football season, ASCE will have an intramural flag football team so be sure to sign up at the first meeting.

This year Southern University will host the ASCE Deep South Regional Conference. A fundraiser may be necessary to help with some of the expenses of the event. Also, ASCE is always looking for sponsors and guest speakers. To contact us, send an e-mail to Melanie Lestelle at mlestel@lsu.edu.

We look forward to welcoming new members and seeing all the returning members at our upcoming meetings!

Contributions to the newsletter are always welcome. If you have news that would be of interest to other CEEs or your classmates, please send it to us so it can be included in a future edition.

Tel: (225) 578-8442

Fax: (225) 578-4945

Please contact Dr. George Z. Voyadjis for more details.

CIVIL AND ENVIRONMENTAL ENGINEERING DEPARTMENTAL CAMPAIGN

The Department of Civil and Environmental Engineering is continuing a fundraising campaign to enrich and enhance programs in the department. Your donation will enhance the Departmental Enhancement Fund supporting new initiatives so that we may continue to produce top-quality engineers.

Our goal is to build an endowment of \$400, 000 and an annual \$50,000 supplement to support the purchase of new lab equipment, computers and software, support of students, and support of faculty activities at professional meetings and conferences.

Any amount will be greatly appreciated; however, donors giving \$200 a year for five or more years or over \$1000 initially will receive special recognition in our departmental newsletter and on the Departmental Enhancement Fund plaque displayed in the department. Company matching funds will also be acknowledged. Please consider the CEE department this year in your annual giving.

DONOR INFORMATION:

(please check)

- \$10,000 or more \$5,000 to \$9,999 \$1,000 to \$4,999
- \$500 or more \$200 to \$499 Less than \$200

I pledge \$ _____ per year for the next _____ years to the CEE Departmental Enhancement Fund for a total of \$ _____.

Please make your checks payable to the "CEE Enhancement Fund"

NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: _____ BUSINESS _____ HOME _____

FAX NUMBER: _____ E-MAIL: _____

GRADUATION DATE: _____ DEGREE: _____

EMPLOYER: _____

Please mail to: Civil and Environmental Engineering
Louisiana State University
3418 CEBA Building
Baton Rouge, LA 70803-6405

You will be contacted by our development coordinator to confirm your pledge and support.

THANK YOU

Alumni News

T. Shane Sandefer, P.E., Project Engineer with Turner Environmental, Baton Rouge, was recently registered as a Professional Engineer.

Donald J. Anderson, Jr., Graduate Engineer, with Frugo South Inc., Houston, will have lengthy work assignments in Venezuela over the next year.

Roy A. Waggenspack, P.E., was recently installed as President of the Baton Rouge Branch of ASCE.

Alumni Update

The Department of Civil and Environmental Engineering wants to know where life has taken you. Who are you working for and what is your title? Have you received any recognition for your work? Are you working on an especially challenging project?

Please complete the following information and attach any additional comments you may have. Space permitting, we would like to use photos of you, your family or your latest project.

Please e-mail your information with attached photos to ceseal@lsu.edu. Or, you may mail your submission to: Civil and Environmental Engineering, LSU, 3418 CEBA Building, Baton Rouge, LA 70803-6405.

CEE ALUMNI INFORMATION

Name: _____ Degree: _____ Year: _____

Home Address: _____

Home Telephone: _____ Email: _____

Position Title: _____

Firm: _____ Business telephone: _____

Business Address: _____

Your News: _____

Don't forget to check out the Department of
Civil and Environmental Engineering Web Site!
www.ce.lsu.edu



- Find out the latest information about the CEE Department
- Contact faculty and staff
- Get information about graduate and undergraduate programs
- Find out the most up-to-date information about student organizations
- and much more!



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