



School of Sustainable Engineering and the Built Environment



Annual Report 2009



PROGRAMS

Civil, Environmental and Sustainable Engineering (CESE)

Del E. Webb School of Construction (DEWSC)



Vision & Mission

The School of Sustainable Engineering and the Built Environment name emerged from review of the existing vision and mission statements from two Ira A Fulton Schools of Engineering school programs:

Civil, Environmental and Sustainable Engineering (CESE)

- Vision Statement: Enhancing the built and natural environment through **sustainable** engineering.
- Mission Statement: **Educate** engineers, develop technology, and inform the public about costs and social and environmental impacts to improve the quality of life and move our society towards a **sustainable** future.

Del E. Webb School of Construction (DEWSC)

- Vision Statement: The DEWSC is the world-wide recognized go-to expert for the best collaboration processes in **sustainable** construction.
- Mission Statement: **Educate** students to advance the collaborative construction process and achieve **sustainability** in the built environment.

These vision and mission statements will continue to drive the individual programs. In addition, our faculty, staff, students and industry partners will be working together over the next year to develop a comprehensive SSEBE vision and mission statement that reflects our desire to teach, conduct research and lead the country in addressing the following National Academy of Engineering Grand Challenges:

- Restore and improve urban infrastructure
- Provide access to clean water
- Manage the nitrogen cycle
- Develop carbon sequestration [and management] methods
- Advance personalized learning
- Engineer the tools of scientific discovery

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The Arizona State University School of Sustainable Engineering and the Built Environment Annual Report is produced by the School of Sustainable Engineering and the Built Environment and published every year.

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Message from the Interim Director



This is a unique time in history where the public and government are both aware of critical infrastructure needs for society and willing to invest significant public funds into renovating and creating new public infrastructure from roads and buildings to buried pipelines for clean water. The new School of Sustainable Engineering and the Built Environment (SSEBE) has extensive expertise to bring to bare in solving short- and long-term infrastructure related challenges. SSEBE brings together new approaches and technologies for transportation, materials, buildings, and water treatment in civil and environmental disciplines with the delivery and leadership approaches developed in construction management

disciplines that can address these challenges.

SSEBE is also positioned to lead a revolution in the way public and private infrastructure is developed. While many of us are familiar now with Leadership in Energy and Environmental Design (LEED) of buildings, there is significantly more that should be undertaken to create more sustainable infrastructure systems. Working with the Global Institute of Sustainability (GIOS), SSEBE will lead within the Ira A. Fulton Schools of Engineering the development of educational and scientific enterprises related to sustainable engineering. Our faculty and students are engaged in three aspects of sustainable engineering that requires rigor and engineering approaches:

- 1. Analysis of complex urban systems** involves life cycle assessment, quantification of risk and uncertainty in engineering design, construction and asset management.
- 2. Development of green technologies** from novel materials, biotechnological approaches to carbon and nitrogen cycle management, and design for disassembly of urban infrastructure.
- 3. Application of sustainable practices** in all areas of urban infrastructure (water resources and treatment, geotechnical management, transportation materials and analysis of transportation systems, novel composite materials and computation approaches to design) through partnerships with industry and municipal governments.

Our faculty and staff are excited about the opportunities for students that will emerge from the creation of SSEBE. Simultaneously, each of the two programs within SSEBE (CESE and DEWSC) will maintain their own unique approaches to education, separate accreditations and ties with industry in a way that builds upon the legacy and history of each program. These are exciting times and we invite you to become engaged with the programs that SSEBE offers.

Paul K. Westerhoff, Ph.D., P.E.
Professor and Interim Director

SSEBE brings together new approaches and technologies for transportation, materials, buildings, and water treatment in civil and environmental disciplines with the delivery and leadership approaches developed in construction management disciplines that can address these challenges.



Undergraduate Programs

Undergraduate degree programs at the Ira A. Fulton Schools of Engineering immerse students in a range of engineering disciplines as well as relevant interdisciplinary studies. Our ABET and ACCE accredited programs prepare students for successful careers or graduate-level studies, with a focus on innovation and societal impact.

Civil engineering majors at ASU have the option to complete a general civil engineering degree or to concentrate in construction engineering or environmental engineering. The civil engineering curriculum prepares students for graduate degrees, Fundamentals of Engineering (FE) exam, and Professional Engineering (PE) registration.

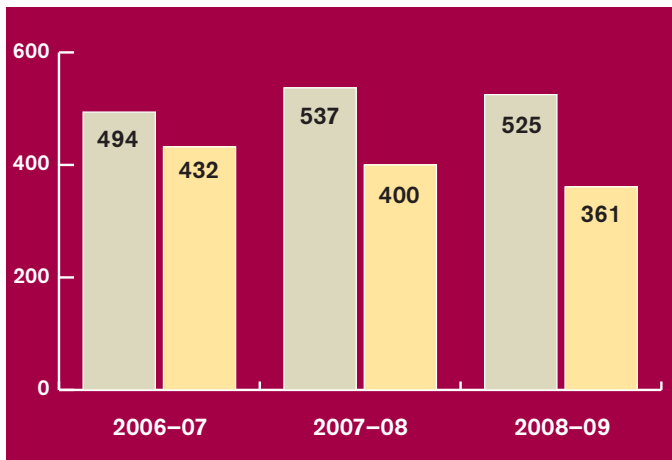
- **Civil Engineering, BSE**
- **Civil Engineering (Construction), BSE**
- **Civil Engineering (Environmental), BSE**



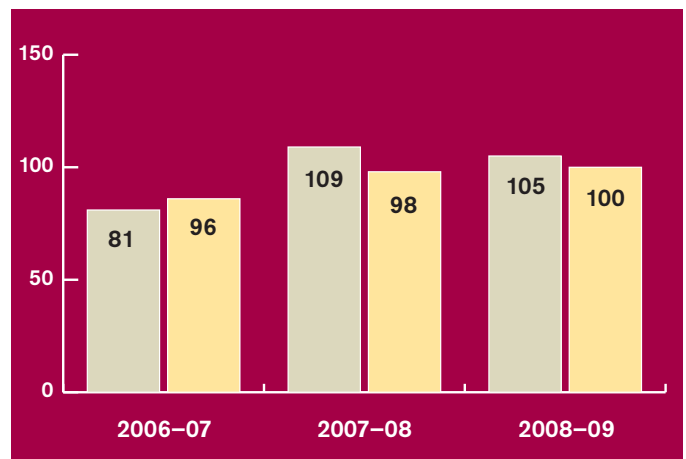
The Del E. Webb School of Construction (DEWSC), accredited by the American Council for Construction Education (ACCE), offers an undergraduate Construction Management program with five areas of concentration.

- **General Construction (industrial & commercial building)**
- **Heavy Construction (roads, bridges, dams & tunnels)**
- **Residential Construction (custom homes, apartments & condominiums)**
- **Specialty Construction (mechanical & electrical)**
- **Concrete Industry Management**

Undergraduate Student Enrollment
Civil, Environmental and Sustainable Engineering (CESE)
Del E. Webb School of Construction (DEWSC)



Undergraduate Degrees Awarded
Civil, Environmental and Sustainable Engineering (CESE)
Del E. Webb School of Construction (DEWSC)



CIVIL ENGINEERING Undergraduate Program

by Mike Mamlouk



The Civil Engineering undergraduate program at ASU grew from 350 students in 2000 to about 600 students in 2006. Currently, we have about 550 undergraduate students and we are graduating 110-120 students with B.S.E. degrees.

We have three undergraduate tracks leading to the same degree: CE without concentration, CE with construction engineering concentration and CE with environmental engineering concentration with typical student distributions of 70%, 20% and 10%, respectively. The difference among these concentrations is different technical elective courses taken in the senior year.

In 2006, the CE curriculum has gone through reformation to remove unnecessary materials and to provide opportunity to build in Fulton attributes of leadership, communication skills and business expertise. We also increased the admission standards and required minimum grades for critical courses. The university has recently implemented a computerized Critical Tracking system and Major Maps that help students track their education progress. The undergraduate CE program comprises five main areas of study including environmental engineering, geotechnical engineering, structures engineering, transportation engineering and water resources engineering. The CE undergraduate program is currently ranked in the top 37% nationwide.

The CE undergraduate program is accredited by the Engineering Accreditation Commission of ABET. The ABET accreditation requires the program to define objectives and outcomes to meet the needs of the program constituents (students, faculty, alumni, employers and industry personnel). The objectives are long-term goals, or what we expect our students to be 3-5 years after graduation. The outcomes are what we want our students to know at graduation to prepare them for professional practice. We continuously assess both objectives and outcomes and try to improve any deficiencies that might arise. Assessment includes surveys, specified course problems and exams, FE exam results, and student and employer interviews.

The CE undergraduate program is scheduled for ABET campus visit in November 2009. For more information on the CE undergraduate program, visit the program website <http://engineering.asu.edu/undergraduate/ces>.

CONSTRUCTION Undergraduate Program

by Edd Gibson



Greetings! It is a great honor to be the new Program Chairman for Del E. Webb School of Construction (DEWSC). It is an exciting time to be a student in DEWSC despite the recent economic challenges. Our undergraduate program has held

steady at around 380 students for the past three years and we are graduating about 100 students per year with the B.S.C. degree.

We have five undergraduate concentrations, residential construction, general building construction, heavy construction, construction industry management, and specialty construction leading to the degree. We are working on a sixth concentration, facility management, which we hope to have in place for next year. Each student takes a core construction curriculum with the addition of five courses specific to their concentration.

We have a very experienced and active faculty, with eleven tenured or tenure-track faculty members, three lecturers and fourteen faculty associates handling teaching duties. With this wide experience base, we teach courses in current areas such as sustainable design and construction, building information modeling, trenchless construction methods, concrete production, heavy construction and mechanical/electrical estimating, facility management, and so on.

The construction industry and alumni continue to support student achievement. This year we awarded forty-four students \$144,500 for their outstanding academic performance.

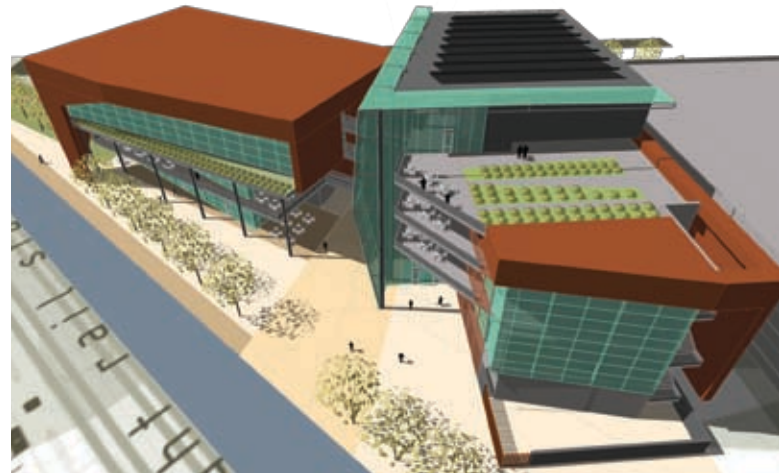
We continue to pursue a diverse student body. We successfully launched the Advancing Women in Construction (AWIC) mentorship program in 2008 and this fall the American Minority Contractors Association (AMCA) mentorship program begins with eight Latino first time freshmen. In addition, the Construction in Indian Country (CIIC) endowment continues to be a successful model to encourage American Indian students to pursue our construction management degree. Our students are very active in the Associated Schools of Construction Regional Competition in Reno, NV, last fall, taking home first place finishes in several events, and moving forward to the national competition.

The CM undergraduate program is accredited by the American Council for Construction Education (ACCE) and is scheduled for an ACCE campus visit in spring 2011. For more information on the CM undergraduate program, visit the program website at <http://construction.asu.edu>.

Graduate Programs

A broad range of theoretical and experimental research programs have been established in civil and environmental engineering to prepare graduate students for careers in professional practice and research. Our graduate programs which include M.S., M.S.E., and Ph.D. degrees are available in the following specialty areas:

- **Construction**
- **Environmental**
- **Geotechnical/Geoenvironmental**
- **Structure & Materials**
- **Transportation/Pavements and Materials**
- **Water Resources**



The Graduate Certificate Program in Sustainable Technology & Management (CSTM) is also available. The CSTM is an interdisciplinary program that helps managers, engineers, and organizations meet the business and engineering imperatives of sustainable development in a globalizing and increasingly competitive economy.

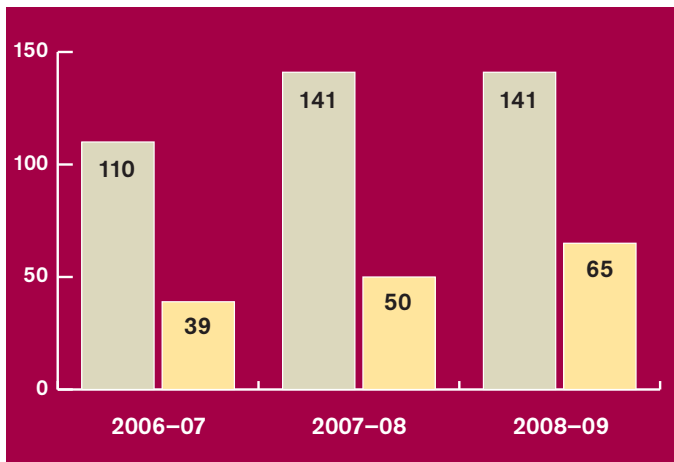
The graduate program at the Del E. Webb School of Construction offers the most advanced academic degrees in Construction. Students can pursue a Master of Science (MS) degree and ultimately, a Doctor of Philosophy (PhD) degree in Construction.

The MS program in Construction offers areas of concentration in Construction Management and Facility Management. The PhD program in Construction aims to prepare research scholars, new faculty, and professionals for positions in industry, academia, and government settings.

Graduate Student Enrollment

Civil, Environmental and Sustainable Engineering (CESE)
Del E. Webb School of Construction (DEWSC)

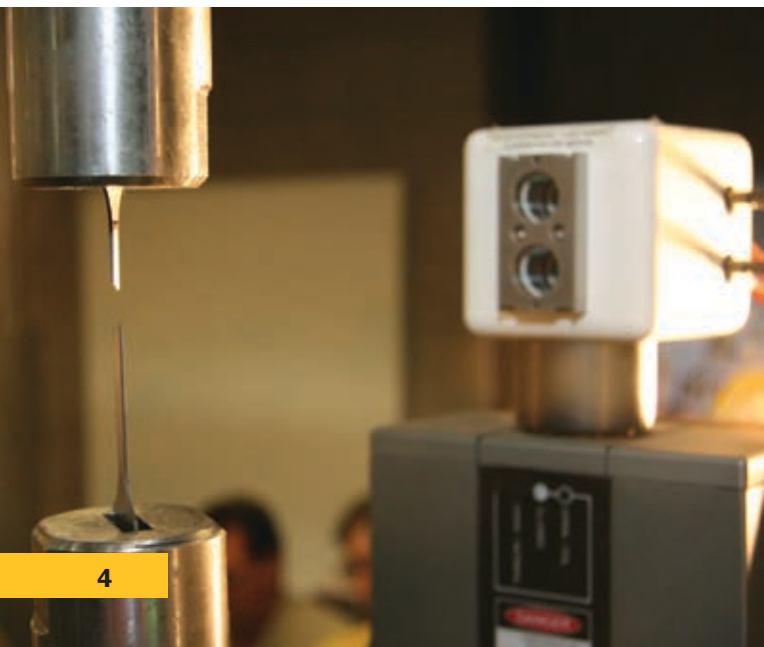
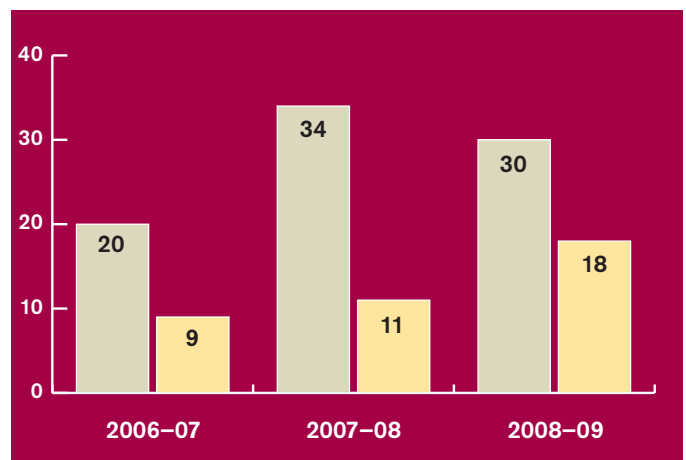
■ CESE ■ DEWSC



Graduate Degrees Awarded

Civil, Environmental and Sustainable Engineering (CESE)
Del E. Webb School of Construction (DEWSC)

■ CESE ■ DEWSC



CESE and Construction Management 4+1 Accelerated Programs

by Subramaniam Rajan



The two degree programs in the School of Sustainable Engineering and the Built Environment - Civil, Environmental, and Sustainable Engineering (CESE), and the Del E. Webb School of Construction, have been authorized to offer a 4+1 Accelerated Bachelor's/Master's

degree program starting Fall 2009 semester.

The program is designed to allow selected high-achieving full-time undergraduate students in CESE and Construction Management the additional flexibility in pursuing advanced degrees and complete both degrees within five years. Students are required to complete 120 units for the BS degree, plus 30 units of approved credit towards the Master's degree. Students may count up to 6 credits as common to the minimum requirements of the both the Bachelor's and Master's degrees. Undergraduate students who meet program standards may apply for admission to the program after completing 74 units of credit towards their Bachelor's degree, e.g. at the end of the first semester of the junior year for students following the standard undergraduate CESE and Construction Management curriculum.

The CESE program is open to both Master of Science (MS) and Master of Science in Engineering (MSE) in Civil and Environmental Engineering degree candidates. Students must satisfy all of the requirements currently identified on the CESE website for the undergraduate program to receive their Bachelor's degree and all of the requirements in the CESE graduate program handbook in their selected specialty area to receive the Master's degree. At the Master's level, students may choose from six specialty areas: Construction Engineering, Environmental Engineering, Geotechnical Engineering, Structural Engineering, Transportation Engineering, or Water Resources Engineering.

The first batch of 8 students (6 in the MSE degree program and 2 in the MS degree program) has been admitted with the first student expected to graduate with an MSE degree in 2011.

The Construction Management program was approved this summer and is open to students wishing to complete the MS degree program with thesis (30 credits with 6 shared credits). Participants will have an opportunity to work in a research environment and engage in theoretical and/or experimental work with faculty and doctoral student mentors. Students will be able to showcase their work at the Del E. Webb School of Construction Graduate Student Research Symposium and be eligible for travel grants to present their work at national conferences.

Further information on all Ira A. Fulton Schools of Engineering 4+1 accelerated program can be found at <http://engineering.asu.edu/accelerated>.

Del E. Webb School of Construction Capital Campaign

As this campaign progresses to its next phase, we continue to be very encouraged by the support we have received. The construction sector has recognized that gifts to the construction program are addressing the central issue facing them, one of economic and workforce development. We are very thankful for the level of trust being placed on us by our loyal alumni and industry supporters and look forward to successfully completing our "Building Foundations" campaign.

Foundation Statistics through July 2009

Total dollars raised:	\$18,173,250
Number of major gifts:	107
Update on endowment campaign:	\$8,673,000
Update on building campaign:	\$7,090,250

Notable Gifts during Fiscal Year 2009

(July 1, 2008-June 30, 2009)

Delta Diversified	\$100,000
Larry Donelson	\$100,000
APS	\$75,000
Concord General Contracting	\$50,000
Bob Strehphans	\$50,000
The Beavers Charitable Trust	\$25,000

Supporting the construction program is an investment in your future workforce!



Research

Civil, Environmental and Sustainable engineering faculty are actively engaged in many local, national and international-level research efforts that have great impact on economic development and environmental quality. These research efforts are concentrated in the area of sustainable urban engineering, with a particular emphasis on arid regions.

CESE is the school of engineering leader in sustainable engineering. The graduate program receives national funding for a wide range of educational and research endeavors. Some of the exciting areas of ongoing research are related to the following:

- **Sustainable Engineering of Urban Systems**
- **Environmental Biotechnology**
- **Environmental Nanotechnology**
- **Transportation, Safety and Materials**
- **Structural Design and Testing at Nano, Meso and Macro Scales**
- **Geotechnology of Arid Soils and Landfills**

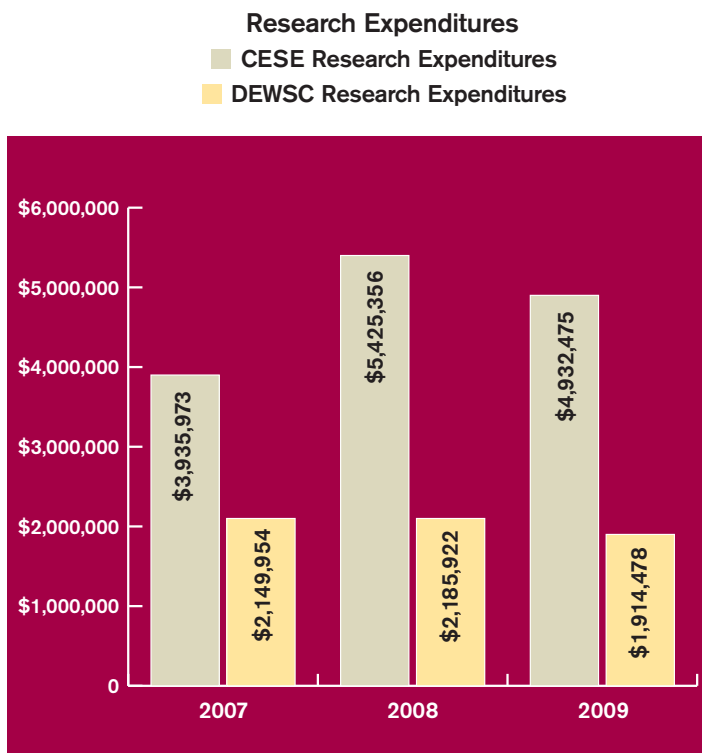
The Del E. Webb School of Construction is a national leader in teaching and producing outstanding, workforce ready students who are able to obtain sponsored project funding to perform innovative research, and operate as leaders in technology transfer and continuing education. Successful research is a major factor in DEWSC's leadership position as a nationally recognized program.

The past two years saw record level research expenditures by the School of Construction. The School also received its first ever NSF Career Award, when Panagiotis Mitropoulos was awarded \$400,000 to study Productivity & Safety.

Examples of active research projects include:

- **Performance Based Procurement**
- **Residential Construction Process**
- **Computer Aided Constructability**
- **Infrastructure Planning**

Advanced Pavement Laboratory in the Interdisciplinary Science and Technology Building 2 (ISTB2)



New Faculty



G. Edward (Edd) Gibson Jr., professor, a member of the National Academy of Construction with decades of teaching, research, administration and project management experience in the

field, is the new **Del E. Webb School of Construction Program Chair** in the School of Sustainable Engineering and the Built Environment in ASU's Ira A. Fulton Schools of Engineering.

Gibson has been a professor in the Department of Civil, Construction and Environmental Engineering since 2006 at the University of Alabama, where he was director of a newly established Construction Engineering program. Under his leadership it has grown to more than 130 undergraduates and 15 graduate students, and raised more than \$1.6 million in endowments. He also was director of the Aging Infrastructure Systems Center for Excellence at Alabama, which has raised \$2 million in research funding.

Gibson sees his new role as "being an enabler of the faculty and students in refocusing education and research on the most critical challenges" facing the construction industry today.

Prior to his years at Alabama, Gibson spent 15 years as a professor at the University of Texas at Austin. For three of those years he was associate chairman of the Department of Civil, Architectural and Environmental Engineering, which included coordinating a graduate program in construction engineering and project management. He has helped lead almost \$10 million in funded research during his career, focusing on areas such as organizational changes, planning, risk management, productivity, dispute resolution and asset management, and has twice been named the Construction Industry Institute's Researcher of the Year. He has developed and taught numerous continuing-education courses for industry and won several teaching awards, including the Construction Industry Institute's Instructor of the Year and the National Society of Professional Engineers' Outstanding Engineering Educator.

Gibson has worked as a project engineer for Texas Instruments and the U.S. Army Corps of Engineers. He earned an MBA in engineering management from the University of Dallas and a Ph.D. in civil engineering from Auburn University. He is a licensed professional engineer and a Fellow in the American Society of Civil Engineers.



Jason S. Lueke, assistant professor, joined the **DEWSC** in January of 2009, after spending five years as an Infrastructure Engineer-Project Manager and Trenchless

Technology Discipline Lead for Associated Engineering, a medium size consulting company based out of Edmonton, Alberta, Canada.

Prior to his consulting career, he was a project manager with a small open trench and trenchless utility contractor in Calgary, Alberta. He has been involved in numerous projects including water distribution, and wastewater and storm water management; undertaking design services, feasibility studies, value engineering, risk mitigation, and tendering services. He also provided specialized expertise for Associated Engineering across Canada on various trenchless construction methods including horizontal directional drilling, pipe relining, pipe bursting, case borings, and tunneling.

Lueke received his Ph.D. in Civil Engineering, specializing in Construction Engineering and Management, from the University of Alberta, Edmonton, in 2005. He employs a hands-on approach that provides a unique blend of practical and theoretical skills to collaborate and conduct effective research in the construction industry. Lueke plans to concentrate his research activities in trenchless construction and rehabilitation methods with a focus on sustainable design and construction practices.



Enrique Vivoni, associate professor, holds a joint appointment with the School of Sustainable Engineering and the Built Environment **(Civil, Environmental and Sustainable Engineering Program)**

and the School of Earth and Space Exploration in the College of Liberal Arts and Sciences at Arizona State University. He joined ASU in January 2009.

Before joining ASU, Vivoni was an associate professor of hydrology at the New Mexico Institute of Mining & Technology in Socorro, NM. He earned his Bachelor of Science degree in Environmental Engineering in 1996, a Master of Science degree in Civil and Environmental Engineering in 1998 and Ph.D. in Hydrology in 2003 from the Massachusetts Institute of Technology.

Vivoni's research will focus on enhancing the predictions of meteorological and hydrological conditions and hazards during the summer monsoon season in the southwestern United States. The research will provide knowledge to help guide environmental management and stewardship of federal lands in the region.

His projects include a watershed study of ecohydrological interactions in the Sevilleta National Wildlife Refuge, a regional study of the hydroclimatological impact of vegetation greening along the Rio Sonora river route in Mexico, and study of the hydrologic effects of logging and fire effects in mountain basins of northern New Mexico.

Vivoni has been named a winner of a Presidential Early Career Award for Scientists and Engineers (PECASE). The PECASE is one of the nation's highest honors given to professionals in the early years of their science and engineering research careers. The awards include up to five years of funding for research in support of critical government missions.

Vivoni's accomplishments include a 2008 U.S. Fulbright Scholar Award, which is supporting his current research in Sonora, Mexico, and the Most Promising Engineer Award given at the Hispanic Engineer National Achievement Awards Conference in 2007.

Brad Allenby designated Stockdale Fellow for 2009-2010



Brad Allenby is a professor in the School of Sustainable Engineering and the Built Environment as well as a professor of law and a professor of engineering and ethics in affiliation with the Joan and David Lincoln Center for Applied Ethics at ASU.

Allenby has been designated a **Stockdale Fellow for 2009-2010** by the U.S. Naval Academy. The Stockdale Fellowship program brings together

academic scholars and teachers with senior career military officers, civil servants, and others to collaborate on strengthening public understanding of the ethics of war and peace, ethics and the military profession, and the relationship of ethics and character to the development of effective leadership in a variety of professional and institutional settings. According to the Naval Academy, ideal candidates from academia will be established scholars with publications and substantial teaching experience in philosophy and ethics, international relations, behavioral science, or public policy.

Allenby will be investigating the social, cultural, ethical, and operational implications of emerging technologies with military and national security implications. Such technologies include the rapidly increasing use of robots in combat situations, new miniaturized mechanisms for surveillance, development of headgear that can “read” and transmit an individual’s thoughts, and pharmaceuticals that enhance cognitive function.

Allenby receives top teaching award and AAAS Fellowship

Two of the most prominent organizations supporting higher education in the nation have selected engineering professor Brad Allenby as one of the winners of its **2008 U.S. Professors of the Year Awards**. The Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support of Higher Education bestows the awards to recognize professors “for their influence on teaching and their commitment to undergraduates.” This program is the only national initiative specifically designed to recognize excellence in undergraduate teaching and mentoring.

Allenby has also been selected as a **Fellow of American Association for the Advancement of Science (AAAS)**, for “distinguished contributions to earth systems engineering and management, design for environment, industrial ecology, and science and technology policy.” Election to its fellowship recognizes individuals for “scientifically or socially distinguished efforts to advance science or its applications.”

Allenby has also been appointed Chair of the IEEE Presidential Sustainability Initiative. Through its global membership, IEEE is a leading authority on areas ranging from aerospace systems, computers and telecommunications to biomedical engineering, electric power and consumer electronics among others. IEEE is considered the world’s leading professional association for the advancement of technology.

Bruce Rittmann Receives National Environmental Award



Bruce Rittmann, professor in the School of Sustainable Engineering and the Built Environment and the Biodesign Institute, was honored with the prestigious **2009 Simon W. Freese Environmental Engineering Award**, in recognition of his pioneering work in the development of biofilm fundamentals and for contributions to their widespread use in the cleanup of contaminated

water, soils and ecosystems. The Freese Award is the highest honor bestowed by the Environmental Engineering Division of the Environmental Water and Resource Institute, a specialized affiliate of the American Society of Civil Engineers.

Additionally, Rittmann has been selected as this year’s recipient of the **Arizona State University Faculty Achievement Award** in Defining Edge Research, Natural Sciences/Math. The Faculty Achievement Award was conceived as a way of celebrating the top intellectual contributions at ASU every year.

Rittmann named ASU Regents’ Professor

Rittmann, was also named one of five ASU Regents’ Professors for 2009 by President Michael Crow and Elizabeth D. Capaldi, executive vice president and provost. The rank of Regents Professor is the highest faculty honor bestowed by the university, in honor of their accomplishments at ASU.

Rittmann is a pioneer in research aimed at developing microbiological systems that capture renewable resources and minimize environmental pollution. His work, which combines engineering with microbiology and chemistry, can be used to reclaim polluted water and generate energy from waste substances.

Invitation to Lifelong Learning Imperative Workshop



Bill Badger has been invited to participate in an invitation-only workshop “**Lifelong Learning Imperative for Engineering Professionals**” to be held in Arlington, VA June 2009. The workshop was organized by a committee of the National Academy of Engineering with support provided by the National Science Foundation to assess current practices in lifelong learning

for engineering professionals, re-examine the underlying assumptions and outline strategies for addressing unmet needs.

Kashiwagi awarded a Fulbright Scholar Grant



Dean Kashiwagi, Professor, Researcher and Director of the Performance Based Studies Research Group, has been awarded a **Fulbright Scholar Grant**

to lecture and do research at University of Botswana in Africa during the 2008-09 academic year. Kashiwagi will be helping the University of Botswana shape an interdisciplinary project management graduate program, exposing them to a futuristic project management model and a leading edge graduate education/research model, and creating an ASU-Africa link in engineering and management.

Barzin Mobasher now a Distinguished Fellow of the American Concrete Institute



Barzin Mobasher, a professor in Civil, Environmental and Sustainable Engineering, has been selected as a **Fellow of the American Concrete Institute (ACI)**, one of the

most prominent organizations in the concrete technology field.

The distinction of Fellow is bestowed by ACI on those who have made “outstanding contributions to the production or use of concrete materials, products, and structures in the areas of education, research, development, design, construction or management.”

Ram Pendyala awarded projects by FHWA and USDOT



Ram Pendyala, Professor of Transportation Systems in Civil, Environmental and Sustainable Engineering, has been awarded two significant projects in

transportation modeling by the **Federal Highway Administration (FHWA) of the US Department of Transportation (USDOT)**. These grants, constituting more than \$1.1 million in research funding, are aimed at developing new methods and tools for multimodal transportation demand forecasting using state-of-the-art microsimulation frameworks.

Snell awarded Henry L. Kennedy Award



Luke Snell, Eminent Scholar in the DEWSC, was awarded the **Henry L. Kennedy Award** for his outstanding contributions to the American Concrete Institute’s educational

certification chapter, and international programs that have greatly enhanced the effectiveness and impact of the Institute. Snell has won various awards from ACI over the years, and last year he was named one of the Ten Most Influential People of the Year in Concrete Industry.

Ed Kavazanjian a standout among leading geotechnical engineers and educators



Edward Kavazanjian, associate professor in Civil, Environmental and Sustainable Engineering, has won the **2009 Ralph B. Peck**

Award from the American Society of Civil Engineers (ASCE). The annual award honors outstanding contributions to the geotechnical engineering profession through the publication of documented case histories.

The Peck Award recognizes Kavazanjian’s contributions through his work specifically on waste containment systems including design of landfills to withstand seismic activity and post-closure development of these facilities.

Kavazanjian was also recognized during a Greater Phoenix Area Engineers Week ceremony as **2008 Outstanding Engineering Educator of the Year** by the National Society of Professional Engineers (NSPE).

This honor is awarded for outstanding contributions to engineering education – particularly in mentoring students and young engineers – and exceptional contributions through his work to the public at large.

Professional integrity, ethics, and statewide reputation are among criteria on which recipients are selected.

In January 2009, Kavazanjian was also appointed chair of the Committee on Geological and Geotechnical Engineering (COGGE) of the National Academies of Engineering and Science National Research Council.



School of Sustainable Engineering and the Built Environment

Enrique Vivoni receives National Science and Engineering Honor



Enrique Vivoni has been named a winner of a **Presidential Early Career Award for Scientists and Engineers (PECASE)**.

The PECASE is one of the nation's highest honors given to professionals in the early years of their science and engineering research careers. The awards include up to five years of funding for research in support of critical government missions.

Vivoni's research and teaching focus are on hydrologic science, water resources and the emerging field of ecohydrology.

Paul Westerhoff receives ES&T Award



Paul Westerhoff, Interim Director of the School of Sustainable Engineering and the Built Environment and a professor of Civil, Environmental and Sustainable Engineering, was awarded the **Excellence in Review Award** by the journal Environmental Science and Technology for his service in providing scholarly and timely reviews to the Environmental Science & Technology journal.

AT&T Industrial Ecology Faculty Fellowship Program

Eric Williams and **Brad Allenby** received a \$25,000 grant awarded through the **AT&T Industrial Ecology Faculty Fellowship Program**. The industrial ecology grant program funds research to seek solutions and decision-making guidelines for the telecommunications industry that are economically efficient and environmentally responsible.

Ira A. Fulton Schools of Engineering faculty receive excellence in teaching awards

Kraig Knutson, lecturer in the Del E. Webb School of Construction, received the **Best Teacher Award for 2008** in the Ira A. Fulton Schools of Engineering for excellence in teaching.

Kenneth Sullivan, assistant professor in the DEWSC, was awarded the Ira A. Fulton Schools of Engineering **Best Teacher Award for 2007**.

Brad Allenby and **Ram Pendyala**, CESE and **Kenneth Sullivan**, DEWSC were also recognized by the Ira A. Fulton Schools of Engineering for being in the **top 5% of the Ira A. Fulton Schools of Engineering Teachers for 2008**.

These faculty have all been acknowledged by their students, peers and school administrators for their contributions to the school's mission of providing rich educational experiences for their students.

ASU Engineering students build a bridge in Honduras



LtoR: Sergio Sanchez, Daniel Tibbetts, Hector Lechuga, Matt Sisul (volunteer professional engineer from New York), Bobby Cottam and Brittany Coll

While many burn bridges, others change lives by building them.

This past year, a team of aspiring civil engineers took on the challenge of designing and building a bridge in the underdeveloped country of Honduras. Bobby Cottam, Sergio Sanchez, Brittany Coll, Daniel Tibbetts, and Hector Lechuga established the ASU Chapter of Bridges to Prosperity. Bridges to Prosperity is a volunteer based charity that was founded at the national level in 2001.

ASU B2P traveled on two occasions to the rural town of Bocuire, Honduras to complete the construction of a 40-meter footbridge. This bridge, baptized 'Puente Fuego' by locals, now serves as an essential lifeline connecting the isolated town of Bocuire to major roads and cities. The efforts of these students exemplify the vision of the Ira A. Fulton Schools of Engineering and Bridges to Prosperity of 'changing lives one bridge at a time' by 'leading engineering discovery and innovative education for global impact on quality of life.'

B2P ASU Chapter

Student Highlights

CESE Students win 1st Place in Surveying and Steel Bridge Display at 2009 Pacific Southwest Regional Conference



The ASU student chapter of **ASCE** achieved great success at this year's **Pacific Southwest Regional Conference** in Honolulu, Hawaii. Overall, ASU placed 6th, with several notable results, including: 1st place in surveying and steel bridge display, 2nd place in impromptu and volleyball, and 6th – 10th in most of the concrete canoe races. In addition to performing extremely well in the competitions, ASU students found time to enjoy various Hawaiian activities ranging from a dolphin show and luau at the Conference awards ceremony to snorkeling and parasailing. Friends of Civil Engineering assisted with travel costs.

Engineers without borders Tsuradú, Ecuador project



Over the summer of 2008, two CESE students **Courtney Oversby** and **Jesse Cascio** continued working on the **Engineers Without Borders (EWB)** water distribution and sanitation systems project in the village of Tsuradú, Ecuador. This project was started in August 2007 when the students prepared to design environmentally, economically and culturally sustainable solutions for the village's water and sanitation problems. Friends of Civil Engineering assisted by providing some of the travel funds.

EWB is a non-profit, humanitarian student organization that pursues partnerships with developing communities to improve quality of life by implementing environmentally conscious engineering solutions.

Concrete Industry Management Students



On November 15th 2008, Concrete Industry Management (CIM) students participated in the annual **ASU Homecoming Parade**. Along with employees from CEMEX, CIM students built a football field float adorned with "concrete" accents. Several students worked on the design and construction of the float for three weeks prior to the parade. CEMEX graciously sponsored the float and assisted students with its construction. Students and staff members walked alongside the float during the parade and handed out candy to the cheering crowd.

Ten CIM students accompanied CIM staff members to the World of Concrete in Las Vegas February 2-6. The **World of Concrete** is an annual convention considered to be the commercial construction industry's biggest and most important event. CIM students participated in educational seminars, attended networking socials and promoted our program along with three other schools at the CIM information booth.

Students attend Transportation Research Board (TRB) Meeting in Washington, DC January 11-15, 2009



The **Transportation Research Board (TRB)** meeting is the world's largest gathering of transportation researchers, practitioners, professionals, and policymakers with more than 10,000 people in attendance. The meeting is held in Washington, D.C. every January so that federal agency employees and officials can attend in large numbers.

This year, ASU faculty and students were engaged at TRB in a significant way. ASU faculty and students appeared in the Annual Meeting program in 30 different sessions and 5 committee meetings.

ASU held a reception bringing together individuals from consulting firms, academic institutions, and government agencies. It helped to continue projecting and enhancing the image of ASU's transportation enterprise.

Student Awards

4.0 CESE Award



Stephen Brown
Grant Dickerson
Nathan Dunkin
Jessica Katz

Academic Success Scholarship

Nicholas Aguilar
Richard Polanco
Jared Regan
Paulina Reina
Sergio Sanchez

Advancing Women in Construction (AWIC)

Josephine Bierwagen
Cynthia Botello
Alisha Bowman
Evelyn Cardenas
Heather Cavitt
Heather Chandler
Ting Ting Chen
Alyssa Erspamer
Ashleigh Feiring
Rebecca Freitas
Jennifer Harris
Brittany Hoste
Lindsay Johnson
Jessica Metler
Kaitlyn Mulhollan
Allison Murphy
Natalie Russell
Rayna Scott
Alexandra Taylor
Kendra Warner
Kimberly Young

AGC Education and Research Foundation Scholarship

Kristen Barlish
Daniel Leuthold
Jeremy Meek

American Subcontractors Association of Arizona Scholarship

Scott Carfi

Ames Family Scholarship

Ephrem Wegayehu
Brandon Williams-White

ARCS Fellowship 2008-09

Ayla Kiser

Arizona Society of Civil Engineers (ASCE) Scholarship

Christy Cavano
Mason Chesla
Sean Nugent

ASPE/Dave Clifton Memorial Scholarship

Bradley Shambaugh

The Beavers Scholarship

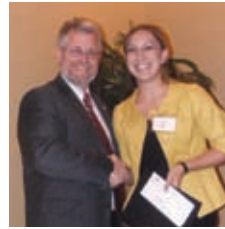
Brittany Hoste

Jim Bebout Memorial Scholarship

Joshua Hansen

Bechtel Group Foundation Scholarship

Kristen Barlish (photo)
Christopher Kisling



Frank Chandler Memorial Scholarship

Daniel Morrison

Civil and Environmental Engineering General Scholarship



Chad Crockett
Michaela Doherty
Christopher Gino
John Holman
Nathan Merrill
Adesh Prasad
Nathan Rodriguez
Jose Rosado

Collaborative Interdisciplinary Research Community/Maricopa Engineering Transfer Scholars

Daniel Alvarado
Ivan Bermudez
Christopher Gino
Kathryn Hoffman
Shelly Lei
Mara Ramos
Paulina Reina
Miguel Romo
Jothan Samuelson
Sergio Sanchez

Dean's Fellowship \$25,000

Elizabeth Adams
Thomas Bruton
Lara Clark
Michelle Cummings-Barry
Darryl Jones

DEWSC Outstanding Undergraduates

Fall 2008 Lynsey Jones
Spring 2009 Jeremy Meek

Distinguished CESE Senior Award

Jessica Katz



Dean's Fellowship \$20,000

Jeffrey Stempihar

Dwight D. Eisenhower Transportation Fellowship \$1,500

Zuduo Zheng

James Fann Memorial Scholarship

Austin King

FNF Construction Scholarship

Michael Thompson

Fulton Department Fellowship \$5,000

Jeffrey Stempihar

Fulton Enrichment Fellowship \$5,000

Jacelyn Rice

Graduate College Enrichment Fellowship

Christopher Clayton
Jacelyn Rice

Ben C. Griggs Memorial Scholarship

John Hamman

Andrew Hanneman Scholarship

Allen Holder
Lynsey Johnson
Tony Mason

Betty Hum Graduate Fellowship

Cynthia King

Institute of Transportation Engineers/International Municipal Signal Association (ITE/IMSAs) Graduate Student Paper Award

Sravani Vadlamani

Ira A. Fulton Schools of Engineering Convocation Student Speech

Jeremy Meek

L.C. Jacobsen Graduate Fellowship

Leonard Kawecki
Marcel Maghiar

Elyse & Paul Johnson Scholarship

Kyle Doudrick

R.H. Johnson Scholarship

Zachary Boxx
Adam Enright
Jeffrey Ocampo
Eric Rotner
William Shirey
Craig Zimmerman

Jerry King Memorial Scholarship

David Bryant

Kitchell Contractors, Inc. Scholarship

Daniel Leuthold

Mike Kolling Memorial Scholarship

Adesh Prasad
Sonia Runyan

Charles Lemon Memorial Scholarship

Bryan Wright



Daniel and Katherine Mardian Scholarship

David Roberts
Ryan Zoldan

Jason D. McElroy Memorial Scholarship

Wesley Smith

Carl L. and Jean Wolcott Meng Scholarship

Keith Christian

NAWIC Scholarship
Josephine Bierwagen



Charles O'Bannon Memorial Scholarship
John Ervin

Charles & Nancy O'Bannon Scholarship
John Holman

Opus West, Inc. Scholarship
Stephen Jasion

Ron Pratte Memorial Scholarship
Victor German

Pulte Home Corporation Scholarship
Abel Esparza

Martin H. Rosness Memorial Scholarship
Jose Rosado

R. Glen Schoeffler Memorial Scholarship
Mariam Martinez (photo)
Matthew Williams



Schuff Steel Co. Academic Scholarship
Rod Miller

Marvin J. Sheldon Engineering Scholarship
Christopher Gino

Sun Valley Construction Scholarship
Aaron Eckersley

National Society of Professional Engineers Engineering Student of the Year award
Sean Nugent

Paragon Structural Design Scholarship
Nathan Rodriguez

PBS&J Foundation Scholarship
Joy Marsalla



2008 RISE competition Best paper award
Hyung-Sool Lee

Rod J. McMullin SRP Water Resources Scholarship
Nathan Dunkin
Joy Marsalla

Science Foundation Arizona Fellowship \$25,000
Kyle Doudrick
Fariya Sharif
Evelyn Walters
Jun Wang

Stanley Consultants Scholarship
Nathan Dunkin
Canio Hoffarth

Sundt Construction Graduate Fellowship
Eugene Estipona
Sharath Sampath Kuppa
Jignesh Patel
Rick Prigge
Shaik Sihabuddin

Sundt Construction Scholarship
Jose Avalos
David Palmer
John Shelby, Jr.

Jan J. Tuma Memorial Scholarship
Vanessa Chavez



University Graduate Fellowship
Mehdi Bakhshi
Taylor Bills
Aboozar Bonakdar
Bridget Cavanagh
Erdong Chen
Christopher Clayton
Michelle Cummings-Barry
Erin Daugherty
Smita Dwivedi
Simon Ghanat
Nasser Hamdan
Rajeev Jain
Darryl Jones
Leila Kabiri-Badr
Cynthia King
Mihai Morea
Derek Morris
Katherine Muto
Mandar Nangare
Robert Oxley
Kalyan Piratla
Aditya Vaidya
Masoud Yekani Fard
Zuduo Zheng
Deju Zhu
Sarah Ziems

Vinnell Foundation Scholarship
Joshua Dixon
Jeffery Forster
Nathaniel Gorrocino
Lindsay Johnson
Michael Lynch
Kaitlyn Mulhollan
Pablo Sandoval
Rayna Scott
Douglas Snover III

Del E. Webb Foundation Finance & Accounting Scholarship
Justin Adams
Philip Kozak

Del E. Webb Foundation Graduate Fellowship
Brad Carey
Danny Knoell
Eduardo Luna Rubio
John Michael
Harry Reynolds

Del E. Webb Foundation Undergraduate Scholarship
Greg Carbajal
David Milakovich

Del E. Webb Foundation Women in Construction Scholarship
Heather Cavitt

Del E. Webb Memorial Award
Jeremy Meek
Lawrence Okani
Justin Parrish

Del E. Webb School of Construction Director's Award
Elliott Bartell
Brandon Gallimore
James Galvin
Curtis Kelner
Ryan Ramos
Samuel Roper
Sterling Smith

Del E. Webb School of Construction Scholarship
Nolan Anderson
Colton Atwell
Bret Burnham
David Kestner
William Scott
Morgan Spears
Christian Sosinski
Ryan Whitt
Kimberly Young

Dr. Sandra L. Weber Memorial Scholarship
Cynthia Botello
Hillary Pickel

Robert J. Wheeler Scholarship
David Agory
Whitney Bunn

D.L. Withers Construction Co. Scholarship
Kyle Drummond



Wood/Patel & Associates, Inc. Scholarship
Rebecca Janney

Student Awards

Tingting Gao, an ASU environmental engineering graduate student has won the **David Benforado Memorial Scholarship from the Air & Waste Management Association (AWMA)** for her air-quality research. The AWMA is an international non-profit organization based in Pittsburgh, established to improve environmental knowledge and decision-making by providing a neutral forum for exchanging information.

The program supports graduate students pursuing careers in air quality, waste management, and environmental management, policy, or law. This \$5,000 scholarship recognizes achievement in air-pollution reduction and control, and waste minimization.

The \$5,000 scholarship and award will be presented to Gao at the AWMA 102nd Annual Conference and Exhibition from June 16-19, 2009 in Detroit.



Smita Dwivedi's project titled "Fiber Extraction/Orientation Asphalt Mixtures" has been selected for funding in the amount of \$2,000 from the **ASU Office of the Vice-President for Research and Economic Affairs**, administered under the 2008-09 Graduate and Professional Student Association Research Grant Program.

Darryl Jones, who will begin pursuing his doctorate at ASU this fall in the School of Sustainable Engineering and the Built Environment, has won the prestigious **2009 Larson Aquatic Research Support (LARS)** scholarship for doctoral students.



The \$7,000 scholarship, named after water chemist and researcher Thurston E. "Lars" Larson, is awarded by the American Water Works Association based on academic excellence and potential to provide leadership in fields relating to water chemistry.

His academic and research record has also helped him earn a \$25,000 Dean's Fellowship Award – the top award offered to incoming Ph.D. students by the Ira A. Fulton Schools of Engineering – and a \$4,000 University Graduate Fellowship from the School of Sustainable Engineering and the Built Environment.

Sean Nugent, president of the ASU ASCE chapter, received the Engineering Student of the Year award. This award is given to an undergraduate or graduate engineering student who has exhibited exemplary contributions to the profession and their communities, is enrolled in an accredited engineering degree program and whose academic achievement is outstanding.

Krishna Prapoorna Biligiri, Ph.D., research scientist in CESE, and **Mena Souliman, Ph.D.** student, were accepted by the International Road Educational Foundation's (IREF) Executive Committee as Executive Fellows and lifetime members of the International Road Federation (IRF) Fellowship Orientation and Executive Leadership Program. They participated and received the award under the



Krishna Biligiri

2009 Executive Leadership Fellowship Grant program which was held in conjunction with the annual meeting of the Transportation Research Board (TRB) in Washington, DC. The selection of the international fellowship awardees was based primarily on their potential as "transportation leaders and decision-makers" in their home countries in the future.

The program was designed to help the fellows connect with not only each other but also leaders in the industry on both the private and public sides. Students represented a broad range of schools and sub-disciplines within transportation, from pavement specialists to traffic engineers. Students attended presentations at the Federal Highway Administration, AASHTO, World Bank, and various major consulting firms.



Mena Souliman

Sarah Ziems has been selected to receive a **2009 Dwight David Eisenhower Graduate Fellowship**. The estimated amount of the fellowship is \$62,300. The objective of the Dwight David Eisenhower Transportation Fellowship Program is to attract qualified students to the field of transportation and research, and advance transportation workforce development.

SSEBE Celebration of Excellence



Stanley Consultants Scholarship presented by Dick Mettee, Stanley Consultants and Paul Westerhoff to Nathan Dunkin and Canio Hoffarth

Each year the School of Sustainable Engineering and the Built Environment holds its annual Celebration of Excellence to award scholarships and fellowships and recognize the outstanding academic achievements of its students.

This year the CESE celebration was held on April 16, 2009 at the Memorial Union Alumni Lounge. The Del E. Webb School of Construction celebration was held on April 8, 2009 at Old Main Carson Ballroom.

CESE Scholarship and Fellowship Donors

- Academic Success Scholarship
- ARCS Fellowship
- Arizona Society of Civil Engineers Scholarship
- Carl L. and Jean Wolcott Meng Scholarship
- Charles Lemon Memorial Scholarship
- Charles & Nancy O'Bannon Scholarship
- Civil and Environmental Engineering General Scholarship
- Collaborative Interdisciplinary Research Community/Maricopa Engineering Transfer Scholars
- Air & Waste Management Association (AWMA) David Benforado Memorial Scholarship
- Dean's Fellowship
- Dwight D. Eisenhower Transportation Fellowship
- Elyse & Paul Johnson Scholarship
- Fulton Department Fellowship
- Fulton Enrichment Fellowship
- Graduate College Enrichment Fellowship
- International Road Federation Fellowship Orientation and Executive Leadership Program
- Jan J. Tuma Memorial Scholarship
- Martin H. Rosness Memorial Scholarship
- Marvin J. Sheldon Engineering Scholarship
- Mike Kolling Memorial Scholarship
- Paragon Structural Design Scholarship
- PBS&J Foundation Scholarship
- Rod J. McMullin SRP Water Resources Scholarship
- Science Foundation Arizona Fellowships
- Stanley Consultants Scholarship
- University Graduate Fellowship
- Wood/Patel & Associates, Inc. Scholarship

DEWSC Scholarship and Fellowship Donors

- Achen Gardner Construction Company
- AGC Student Chapter
- American Subcontractors Association of Arizona
- American Society of Professional Estimators, Chapter Six
- Andrew Hanneman Family
- The Beavers Heavy Engineering Construction Association
- Bechtel Construction
- Ben C. Griggs Memorial
- D. L. Withers Construction Company
- Daniel and Katherine Mardian Family
- Del E. Webb Foundation
- FNF Construction Company
- Frank Chandler Memorial
- James Fann Memorial
- Jason D. McElroy Memorial
- Kitchell Contractors, Inc.
- National Association of Women in Construction
- Opus West Construction Company
- Pulte Home Corporation
- R. Glen Schoeffler Memorial
- Richard Dawn Family
- Robert J. Wheeler Memorial
- Wink Ames Family

SCHOLARSHIPS & FELLOWSHIPS

DEWSC		
	Graduate Fellowships	Undergraduate Scholarships
2008/09	\$48,500	\$234,750
2009/10	\$24,200	\$186,750

CESE		
	Graduate Fellowships	Undergraduate Scholarships
2008/09	\$162,800	\$84,042
2009/10	\$326,300	\$96,307

We would like to thank all the donors who support our students and make a difference in their future each year.

INDUSTRY AND ACADEMIA WORKING TOGETHER TO TRAIN TOMORROW'S WORK FORCE

Friends of Civil Engineering (FOCE)

enable the school to assist students with educational and research activities with the end result of providing the civil engineering community with well-rounded, educated professionals. Through an annual donation funds are provided for scholarships, student travel to conferences, ASCE student chapter travel, social events that bring industry professionals, students and faculty together, visiting scholars and a commencement luncheon for our graduates.

FOCE CONTRIBUTORS

AMEC Earth & Environmental
Ames Construction
Black & Veatch
Brown and Caldwell
Carollo Engineers
CivTech, Inc.
Coe & Van Loo
Consultant Engineering
Dibble Engineering
Entellus
Erie & Associates
Golder Associates Inc.
Kennedy/Jenks
Kiewit Western Co.
Kimley-Horn & Associates
Chris & Sandi Kmetty
Geza and Esther Kmetty
Malcolm Pirnie, Inc.
Michael Baker Jr., Inc.
M2 Group
Nabar Stanley Brown
Pacific Advanced Civil Engineering
PB Americas, Inc.
RBF Consulting
Ricker, Atkinson, McBee, Morman & Associates
Stanley Consultants
T & S Diversified
Waste Management
Western Technologies
Wilson Engineers
Wood Patel and Associates

Friends of Civil Engineering (FOCE)

The CESE faculty, staff, and students appreciate all of the support our FOCE contributors provide for CESE programs at ASU.



Bruce Larson, RBF Consulting

▪ Fall Student Mixer

Annual fall student mixer for CESE students and members of FOCE plus door prizes sponsored by FOCE. Gift cards to Fry's Electronics were won by: Jie Sheng (\$50), Krishna Biligiri (\$100), and Ting-ting Gao (\$150).



Students and industry members at the FOCE Mixer.

▪ FOCE Scholarships

Textbook scholarships totaling \$7,800 awarded to 104 students.

▪ Career Fair Door Prize

Computer laptop door prize won by Kevin Diefenderfer, a CESE senior undergraduate student.

▪ Student Travel

4 CESE students attended and presented papers at the Transportation Research Board (TRB) 88th Annual Meeting in Washington, D.C. in January.

2 CESE students continued working on the Engineers Without Borders water distribution and sanitation systems project in the village of Tsurakú, Ecuador.

ASU ASCE student group participated in the Pacific Southwest Regional Conference (PSWRC) in Hawaii.



Students participate in the Concrete Canoe Race at the PSWRC in Hawaii.

▪ Graduation Luncheon

Graduation luncheon each semester for graduating students and their families. As part of the ceremony, Ph.D. and Masters students were hooded by their faculty advisory.



Dr. Morteza Abbaszadegan hoods Ph.D. student Pedram Shafieian

Research Centers within the **School of Sustainable Engineering and the Built Environment**

Alliance for Construction Excellence (ACE)

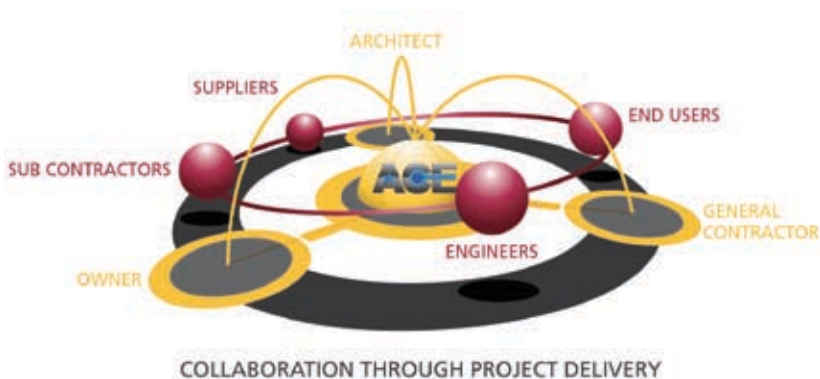
Gary Aller, Director



The Alliance for Construction Excellence (ACE) center, established in 1992 through a joint initiative between industry veterans and leading academicians, culminated an eight year effort to formulate a dynamic organization to act as a think tank and facilitate collaboration through inreach/outreach between the university and industry. ACE operates today as part of the School of Sustainable Engineering and the Built Environment in the Ira A. Fulton Schools of Engineering at Arizona State University (ASU).

ACE's mission is simply to **A**dvance, **C**ollaborate and **E**nrich. In partnership with industry leaders, ACE provides broad, nonpartisan access to both university and industry resources. ACE facilitates assimilation of technological changes and research innovations into the industry. It provides a neutral forum for the industry and academia to identify, define and resolve industry challenges. ACE aims to enrich and advance the industry while increasing the excellence of education, training and research at ASU.

The diverse membership base consisting of professional associations, owners, prime and subcontractors, architects, engineers, and suppliers coupled with the more than 3,000 people participating in ACE activities and its network of more than 28,000 professionals helps ACE achieve its mission and offer innovative solutions to real world challenges.



This extensive industry relationship provides a very valuable link in supporting the university through scholarships and fellowships, funds for research and resources for data collection and living laboratories, outlets for internships, personal relationships that provide for gift giving opportunities and as an outlet for ASU's most precious product, the graduating students.



Alliance for Construction Excellence (ACE)

Research Centers

within the **School of Sustainable Engineering and the Built Environment**

Center for Earth Systems Engineering and Management (CESEM)

Brad Allenby, Director



Many scientists have noted that, especially since the Industrial Revolution, most natural systems are increasingly shaped by human activities. The global climate system; water for agriculture, industry and drinking; natural biogeochemical systems such as the carbon and nitrogen cycle; important regional regimes such as the Everglades or the Baltic Sea; rapidly expanding cities such as Phoenix or Shanghai – all are now being defined by the economic and social activity of six billion people. The emergent behaviors of the complex integrated human/built/natural systems that characterize this anthropogenic planet are increasingly important, and increasingly intertwined with existing and emerging technology systems. Thus, the fundamental challenge to the Center for Earth Systems Engineering and Management (CESEM) is to respond to the question: *“How can our species, already shaping an entire world without knowing it, learn to do so responsibly, rationally, and ethically?”*

This leads to the overarching vision of CESEM: to establish the intellectual and practical foundations for design, engineering and management of regional and global earth systems in a world increasingly shaped by human activity.

In performing its mission, CESEM combines research, teaching, outreach and public service in an effort to learn how engineered and build systems are integrated with natural and human systems, studying such questions as how to design and implement sustainable infrastructure systems, defining and sustaining urban resiliency against natural disasters and terrorist attacks, and understanding the implications of emerging technologies such as nanotechnology, biotechnology, robotics, information and communication technology, and cognitive science.

**Center for Earth
Systems Engineering
and Management
(CESEM)**



Research Centers within the **School of Sustainable Engineering and the Built Environment**

Center for Environmental Biotechnology (CEB)

Bruce Rittmann, Director



The theme of the Center for Environmental Biotechnology is “managing microbial communities to provide services to society.”

The services include generating renewable bioenergy, improving the quality of water, and bioremediating contaminated soils and aquifers. To manage microbial communities well, Center researchers conduct fundamental research to understand what microorganisms are present, what reactions they are capable of carrying out, what reactions they are carrying out, and how they interact with each other and their environment. This research brings to bear state-of-the-art research tools involving genomics, proteomics, chemistry, and mathematical modeling. Armed with understanding, Center researchers design and evaluate systems that create conditions allowing the right microorganisms to flourish and perform the needed services. Managing the microbial communities means creating the ideal “win-win” situation: The microorganisms thrive while providing the services. This more applied research often is carried out in the field in partnership with leading practitioners.

The Center is directed by professor Bruce Rittmann, who is joined in leadership by professors Rolf Halden and Rosa Krajmalnik-Brown. The Center’s research staff numbers over 40 and is comprised of PhD students, post-doctoral associates, research scientists, and visiting scholars. The Center has approximately 8,000 ft² of state-of-the-art research space in the Biodesign Institute.



**Center for
Environmental
Biotechnology
(CEB)**

Research Centers

within the **School of Sustainable Engineering and the Built Environment**

Concrete Industry Management (CIM)

James Erzen, Director



The goal of the CIM program is to produce broadly educated, articulate graduates, manage systems and equipment grounded in basic construction management, who are knowledgeable of concrete technology and techniques and who are able to lead people, systems and to promote products or services related to the concrete industry. This broad education provides our graduates a broad career field...sales, operations, project and production management, tech services...within the concrete industry... concrete producers; cement, admixtures, or equipment manufacturing; concrete or general construction; developers.

The curriculum was developed using input from leaders of both the concrete and construction industries. The curriculum includes general studies requirements, business and construction classes, coursework, concrete industry-related courses and two internships that provide practical experience and many times result in a permanent position upon graduation.

CIM has the utmost support from the concrete industry. The need for such a program was recognized in 1994 and was put into action by the concrete industry. What resulted was a partnership between the concrete industry and Middle Tennessee State University to develop CIM. The result has been a successful program for both the industry and the graduates. This success coupled with the continued need for industry-educated graduates, has brought about the expansion of the CIM program to ASU and the Del E. Webb School of Construction for the spring semester of 2006. The DEWSC is ranked as one of the best schools of construction in the nation.

**Concrete
Industry
Management
(CIM)**



Research Centers within the **School of Sustainable Engineering and the Built Environment**

Construction Research and Education for Advanced Technology Environments (CREATE)

Allan Chasey, Director




CREATE is a consortium of industry members that provide a collaborative environment to develop research and continuing education programs focused on constructing and maintaining advanced technology facilities (controlled environment such as semiconductor manufacturing, data centers, research labs, and healthcare).

Current research includes the development of Building Information Modeling (BIM), and how Construction Management Programs can better educate students to meet the industry need. CREATE is also continuing research on improved methods for utility line locating and relocating for better damage prevention for our underground infrastructure.

CREATE has developed unique hybrid (on-line and resident) courses utilizing technology as a method to provide an educational platform to prepare the industry workforce for the challenges of today's increasingly complex facilities.

Our educational programs have provided a unique experience for professionals who are new to Advanced Technology Environments or would like to upgrade their skills. Currently we have two programs, Program Manager's Development Program and Facility Manager's Development Program. These unique programs provide the participants an online educational experience, group discussions and a culminating face to face program with site visits, instruction by industry experts, and relevant case studies that tie all the information together into a coherent program.



**Construction Research
and Education for
Advanced Technology
Environments (CREATE)**

Research Centers

within the **School of Sustainable Engineering and the Built Environment**

Housing Research Institute (HRI)

Howard Bashford, Director



The Housing Research Institute (HRI) consolidates all the residential construction research within the Del E. Webb School of Construction. The focus of the HRI is to build residential homes of higher quality construction, which are more energy efficient, durable, sustainable, safer, and affordable.

With this in mind, Arizona State University entered into a partnership with PATH (a White House initiative administered by the US Department of Housing and Urban Development (HUD), which is aimed at bringing new technologies to the homebuilding industry) and several major Arizona homebuilders, trade contractors, and manufacturers. The mission of the Arizona Partnership for Advancing Technology in Housing (AzPATH) is to promote research and development in the Arizona homebuilding industry and provide leadership in the southwest area housing industry through research, learning, and development of innovative practices.

AzPATH accomplishes this through in-depth investigation of industry practices, development of relevant performance measurement criteria, identification of problem areas, and implementation of solutions.

Research is an invaluable part of HRI's program as HRI and AzPATH work in conjunction to improve the quality, affordability, and durability of new and existing homes. Through research we are able to study current trends in the construction process, thereby discovering areas for improvement. Assessment of current trends helps the HRI create training programs and innovative methods that will aid the industry in effecting these improvements.

**Housing
Research
Institute
(HRI)**



Research Centers within the **School of Sustainable Engineering and the Built Environment**

Performance Based Studies Research Group (PBSRG)

Dean Kashiwagi, Director




Since 1994, the PBSRG has applied best value and leadership based concepts to develop organizational and service models that enhance efficiency, performance, and minimize risk.

The PBSRG founder and director, Dean Kashiwagi, developed Performance Information Procurement System (PIPS) which is an information-based system which has been tested to assist users in making documented and justified decisions that they are receiving the best value contractor, vendor or service provider. It is contrary to traditional price-driven procurement. It is a process in which the construction or service vendor self regulate (measure their own performance), act in the best interest of the client, and assign accountability to all participants. The technology has been tested over 600 times totaling \$2.45 Billion (\$744 million in construction projects and \$1.7 billion in professional service projects) with a 98% success rate.

PBSRG's on-going PIPS efforts:

- U.S. Army Medical Command Quality Assurance (QA) Program Development
- \$400M facility maintenance and modification program.
- Arizona State University – Delivery of Food Services (\$100M over 10 years), outsourcing of IT Networking Services, delivery of furniture to the three major State of Arizona universities.
- Neogard Corporation – 12 year research partner implemented PIPS concepts to maximize the value and performance of their products.
- International efforts – Created a new project management model for the University of Botswana graduate programs, and running tests in their IT Department.
- University of Minnesota Capital Planning and Project Management Department – Reorganization efforts.
- State of Oklahoma – Projects in design/construction.
- State of Idaho – Selection of university wide insurance services.



**Performance
Based Studies
Research Group
(PBSRG)**

Research Centers

within the **School of Sustainable Engineering and the Built Environment**

Water and Environmental Technology Center (WET)

Morteza Abbaszadegan, Director



The National Science Foundation (NSF) has awarded a five-year, \$1.24 million grant for establishing the Water & Environmental Technology (WET) Center with research units at Arizona State University (ASU), University of Arizona, and Temple University.

Morteza Abbaszadegan, a professor of Civil, Environmental and Sustainable Engineering is the Director of the WET Center at ASU. During the last ten years, as director of the NSF Water Quality Center, he provided leadership in addressing the imminent water quality issues by establishing channels of communication between academia and industry. The WET center will continue to provide premier leadership to confront emerging challenges in the areas of water and environmental technologies at local, national and international levels playing an instrumental role in enhancing the technical competence of students, practicing professionals and decision-makers.

Research areas of the Center will continue to be in environmental pollution treatment (Microbial, Chemical and Anthropogenic) and development of advanced technologies and sensors for the rapid detection and controls of contaminants. The Center will provide a platform to address issues as diverse as water quality by capitalizing on the strengths of partner organizations. The academic setting of the Center will help to produce a new generation of leaders in environmental science and technology.

**Water and
Environmental
Technology Center
(WET)**





Morteza Abbaszadegan, Ph.D.
Professor
 Civil, Environmental &
 Sustainable Engineering
**Health-Related Water
 Microbiology**

Morteza Abbaszadegan is a professor and director of the National Science Foundation (NSF) Water & Environmental Technology (WET) Center at Arizona State University. He joined the department in 1999 after spending more than six years as a Microbiology Research Manager in private industry. He developed an Environmental Microbiology course (CEE 467/567) for the CESE program.

Abbaszadegan's research interest focuses on health-related water microbiology including microbial detection methodologies, pathogens inactivation and removal mechanisms during water treatment processes, and water quality in water distribution systems. He has developed new techniques for the detection of viruses, bacteria, Giardia and Cryptosporidium in water samples. He has authored more than 50 research papers in peer-reviewed journals and more than 20 in books and reports.

Abbaszadegan successfully established a NSF Water Quality Center (WQC) and WET Center at ASU. The NSF Centers provide a platform to address issues as diverse as water quality by capitalizing the strengths of partner organizations. The Centers have provided research resources and capabilities to the participating members in a variety of water quality arenas.



Soyoung Ahn, Ph.D.
Assistant Professor
 Civil, Environmental &
 Sustainable Engineering
Transportation

Soyoung Ahn joined Civil, Environmental and Sustainable Engineering at Arizona State University in 2006. Prior to joining ASU she received her Ph.D. (2005) in Civil and Environmental Engineering from the University of California, Berkeley and served as a Postdoctoral Research Associate in the Department of Civil and Environmental Engineering at Portland State University, Oregon.

Ahn's research and teaching interests are in traffic flow theory and operations, Intelligent Transportation Systems applications, and traffic operational impacts on safety. Her goal is to acquire a more defined understanding of traffic phenomena for developing long-term solutions. Ahn's work also addresses more immediate transportation problems concerning users and practitioners. Her research has been published in internationally-recognized journals and conferences such as *Transportation Research* and *Transportation Research Record* and has also been presented at numerous academic institutions.

Selected Publication:
 Laval, J., Chen, D., Ben Amer, K., Guin, A., and Ahn, S. (2009). Evolution of Oscillations in Congested Traffic: Improved Estimation Method and Additional Empirical Evidence. Forthcoming in *Transportation Research Record, Journal of the Transportation Research Board*.



Braden R. Allenby, Ph.D., J.D.
Professor
 Civil, Environmental &
 Sustainable Engineering
Earth Systems Engineering

Brad Allenby is the Lincoln Professor of Engineering and Ethics, and of Law, a professor in CESE and the Director of the Center for Earth Systems Engineering and Management at ASU.

He moved from his previous position as the Environment, Health and Safety Vice President for AT&T in 2004. Allenby received his B.A. from Yale University, his J.D. and M.A. (economics) from the University of Virginia, and his M.S. and Ph.D. in Environmental Sciences from Rutgers University.

Allenby is past President of the International Society for Industrial Ecology, ex-Chair of the AAAS Committee on Science, Engineering, and Public Policy, Chair of the IEEE Presidential Sustainability Initiative, an AAAS Fellow, an AT&T Industrial Ecology Fellow, a Templeton Research Fellow, a Batten Fellow in Residence at the University of Virginia's Darden Graduate School of Business Administration, and a Fellow of the Royal Society for the Arts, Manufactures & Commerce.

His areas of expertise include Design for Environment, industrial ecology, telework and netcentric organizations, transhumanism, and earth systems engineering and management.

In 2008 Allenby was selected by the Carnegie Foundation as 2008 Arizona Professor of the Year.



Samuel T. Ariaratnam, Ph.D., P.E.
Professor
 Del E. Webb School of
 Construction
**Urban Underground
 Infrastructure Systems**

Samuel Ariaratnam is a professor in the Del E. Webb School of Construction at Arizona State University. He received his B.A.Sc. in Civil Engineering from the University of Waterloo (Canada) and his M.S. & Ph.D. from the University of Illinois at Urbana-Champaign.

Ariaratnam's educational and research interests lie in the area of "Urban Underground Infrastructure Systems" with an emphasis on Horizontal Directional Drilling and Trenchless Pipe Replacement. He has published over 150 technical papers, holds three patents, co-authored five textbooks, and is active in numerous professional organizations.

In 2003, he was presented with the Young Civil Engineer Achievement Award from the University of Illinois at Urbana-Champaign. Ariaratnam is a past recipient of the John O. Bickel Award from the American Society of Civil Engineers (ASCE) and was named to the Phoenix Business Journal's prestigious "Top Forty Under 40" list in 2006. Currently, he serves as the Vice Chairman of the International Society for Trenchless Technology and is active in the local community as a member of the Tostitos Fiesta Bowl Committee.

Ariaratnam is a registered professional engineer in the State of Arizona and the Province of Ontario (Canada).



William W. Badger, Ph.D., P.E., N.A.C.
Professor
 Del E. Webb School of Construction
Construction Management

Bill Badger received his Ph.D. in Soil Mechanics from Iowa State University in 1972, his MSCE in Civil Engineering from Oklahoma State University in 1964, and his BSME in Mechanical Engineering from Auburn University in 1959.

Badger was the director and a professor in the Del E. Webb School of Construction (DEWSC) from 1992 to 2005. He is currently a professor in DEWSC.

From 1982 to 1985, Colonel Badger was the Engineer for the United States Military Academy (West Point), supervised long-range planning, engineering, energy, environmental, construction, and maintenance. 1979-82, Colonel Badger was the District Engineer in St. Paul, MN. As Commander of a U.S. Army Engineering District, he provided leadership and management to an engineering organization of 800 personnel with an area including parts of five states, executed programs of planning, engineering, construction, and operation of navigation and flood control projects and conducted emergency operations for floods and other natural disasters.

Awards:
 One of ENR's 25 Newsmakers of 2008.
 The Construction Industry Institute's Richard L. Tucker Award for Leadership & Service, 2007.
 Associated Schools of Construction's Life Time Achievement Award, 2005.
 Member of the National Academy of Construction, 2000.



Howard H. Bashford, Ph.D., P.E.
Associate Professor
 Del E. Webb School of Construction
Residential Construction

Howard Bashford owned and operated an engineering consulting firm for 19 years and a construction development company for 8 years before coming to the DEWSC in 1991. He has been a faculty member ever since, spending two years at Brigham Young University and the remainder of the time at DEWSC.

Bashford has served as Director of the Graduate Program since 1997. He has also worked with Drs. Walsh and Sawhney of DEWSC to develop a collaborative research program focused upon residential construction. This has led to the development of the Arizona Partnership for Advancing Technology in Homebuilding (AzPath), a partnership with five local home builders, National Science Foundation, and the US Department of Housing and Urban Development (HUD). Bashford is also the Director of the Housing Research Institute (HRI) at ASU.

Bashford also heads the Master of Real Estate Development (MRED) program at DEWSC. This accelerated program is part of a university wide transdisciplinary degree, collaborating with the schools of design, law and business at Arizona State University.

He is the recipient of the 2003 Crescordia Award for Outstanding Excellence in Environmental Education.



Allan D. Chasey, Ph.D., P.E.
Associate Professor
 Del E. Webb School of Construction
High-Technology Construction

Allan Chasey, an associate professor in the Del E. Webb School of Construction received his Ph.D. from Virginia Tech, M.S. in Engineering Management from the Air Force Institute of Technology, and B.S. in Civil Engineering from Arizona State University.

He is Director of CREATE, a research consortium of companies representing the Advanced Technology design and construction.

Chasey has developed a graduate program in Advanced Technology facilities in conjunction with leading experts in controlled environment manufacturing. This one-of-a-kind program focuses on the construction process for high-technology, controlled environment facilities. He is also developing the Building Information Modeling (BIM) curriculum for the School of Construction.

Chasey is a registered Professional Civil Engineer in Arizona, an OSHA Construction Outreach Trainer, and a LEED AP. He is a member of the American Society of Civil Engineers (ASCE), the Association for the Advancement of Cost Engineering (AACE), the Institute of Environmental Sciences and Technology (IEST), International Society of Pharmaceutical Engineers (ISPE), and the Semiconductor Environmental, Safety, and Health Association (SESHA). He also serves as the lead of the Facilities Working Group for the Factory Integration TWG for the International Technology Roadmap for Semiconductors (ITRS).



James J. Ernzen, Ph.D., P.E.
Associate Professor
 Del E. Webb School of Construction
Concrete Materials and Construction Operations

Jim Ernzen is an associate professor and Director of Concrete Industry Management (CIM) at the Del E. Webb School of Construction.

He has over 22 years experience as a construction manager, project engineer, construction materials researcher, and civil engineering educator in the Army Corps of Engineers.

Ernzen serves as the Academic Co-chairperson of the Project Delivery Methods Task Force sponsored by the Alliance for Construction Excellence at Arizona State University where he teaches a graduate course, conducts seminars, and performs research. He also teaches courses and conducts research in concrete materials and concrete construction operations.

His expertise is in alternate project delivery methods, project management and safety, reinforced concrete design and construction operations.

He received his Ph.D. in Civil Engineering at the University of Texas at Austin, M.S. in Mechanical Engineering from University of Notre Dame and B.S. in Mechanical Engineering from University of Notre Dame.


Apostolos Fafitis, Ph.D., P.E.

Associate Professor
Civil, Environmental &
Sustainable Engineering
**Concrete and Structures
Design**

Apostolos Fafitis joined the faculty at ASU in 1984. He received his Ph.D. from Northwestern University. Prior to joining ASU, Fafitis worked for 15 years for various structural consulting companies in South Africa, Greece and in the USA. He has been involved in the analysis and design of reinforced and prestressed concrete bridges and buildings.

Fafitis' teaching interests include: Statics and Strength of Materials, Reinforced and Prestressed Concrete Design, Nonlinear Structural Analysis and Dynamics of Structures.

Research Interests:
Constitutive Modeling of Brittle Materials, Elasto-plastic Behavior of Structures, Time Dependent and Nonlinear Structural Analysis and Seismic Isolation of Structures.

Selected Publications:
Attard, T. and Fafitis, A.
"Modeling of Higher-Mode Effects in Frame Buildings Using an Optimal Multi-Modal Pushover Analysis, Fifth International Conference on Earthquake Resistant Engineering Structures, ERES2005, Skiathos, Greece, 2005.

Santamaria, G., Fuller, B. and Fafitis, A. "Structural Properties of a New Material Made of Waste Paper", 13th International Conference on Computational Methods and Experimental Measurements" Prague, Check Republic 2007, pp. 557-567


Peter Fox, Ph.D., P.E.

Professor
Civil, Environmental and
Sustainable Engineering
**Wastewater Treatment and
Water Reclamation**

Peter Fox has been a faculty member in Civil, Environmental and Sustainable Engineering at ASU for 19 years. He received his Ph.D. in Environmental Engineering from the University of Illinois in 1989, his M.S. in Environmental Engineering from the University of Illinois in 1985 and his B.S. in Chemical Engineering with Honors from the University of Illinois.

His professional interests are primarily in water reuse, biological treatment processes and combined biological/adsorptive systems. He has focused his work on natural treatment systems, groundwater recharge and indirect potable water reuse for the last fifteen years.

Fox served on the National Academy of Science ad-hoc committee that published the National Research Council report entitled "Prospects for Managed Underground Storage of Recoverable Water" in 2008. He also authored the groundwater recharge chapter in the Metcalf and Eddy textbook on water reuse. In addition, Fox was an executive committee member for the development of the national roadmap for desalination and water purification.

Fox was awarded the Quentin Mees Research Award from the AzWater Association in 1991, 1994, 1997 and 2003.


G. Edward (Edd) Gibson, Jr., Ph.D., P.E.

Professor and Program Chair
Del E. Webb School of
Construction
Construction Management

Edd Gibson joined ASU and the Del E. Webb School of Construction in August 2009 as its Program Chair. He is Professor and Sunstate Chair of Construction Management and Engineering in SSEBE.

Gibson has led over \$9 million in funded research during his career from sponsors such as NSF, Construction Industry Institute, NRC, Alfred P. Sloan Foundation, Texas Department of Transportation, U.S. Army Corps of Engineers and others. He has taught on the university level for almost 20 years and has delivered more than 190 short courses to industry during that time, receiving awards for university and continuing education instruction.

Gibson has several years of industry employment experience with the U.S. Army Corps of Engineers and Texas Instruments, and is a licensed professional engineer in Texas.

He is Past-President of the Board of Governors for the Architectural Engineering Institute within the American Society of Civil Engineering.

Honors & Distinctions:
Elected as Fellow in ASCE, 2006.
Elected National Academy of Construction (NAC), 2005.
U.S. Dept. of State, Fulbright Senior Specialist Grant to Norway, 2004.
Construction Industry Institute's Researcher of the Year Award, 2004.
National Society of Professional Engineers, Sustaining Universities Program, Outstanding Engineering Educator Award, 2002.


Rolf U. Halden, Ph.D., P.E.

Associate Professor
Civil, Environmental &
Sustainable Engineering
**Environmental Engineering and
Water Resources**

Rolf Halden received his Master's degree in Biology (Diploma, 1992) from the Technical University of Braunschweig, Germany, and a second Master's (1994) and Ph.D. (1997) in Civil Engineering from the University of Minnesota.

His research and teaching interests are in bioremediation, proteomic mass spectrometry, human exposure assessment, and sustainable chemistry. Ongoing projects focus on the occurrence and fate of pharmaceuticals and personal care products (PPCPs) in the environment, the genomic and proteomic characterization of pollutant-degrading microorganisms, the development of in situ microcosm array (ISMA) technology for remedial design, and the determination of body burdens and biomarkers of toxic exposures and effects in adults and children.

Halden's microbiology and mass spectrometry labs are housed in the Center for Environmental Biotechnology at ASU's Biodesign Institute. He has served on the Maryland State Water Quality Advisory Committee, the Food and Drug Administration's Nonprescription Drugs Advisory Committee, and a National Research Council committee of the National Academies.



Sandra Houston, Ph.D., P.E.
Professor
 Civil, Environmental &
 Sustainable Engineering
Geotechnical Engineering

Sandra Houston has been a member of the Civil, Environmental and Sustainable Engineering faculty at ASU for 25 years and former chair of the department. Her primary area of expertise is geotechnical engineering. Houston's contributions to the field of geotechnical engineering focus on advancement of methodologies for dealing with arid region problem soils, particularly collapsible and expansive soils.

She is the regular instructor of undergraduate and graduate level foundation engineering classes and has recently developed a graduate level course on Unsaturated Soil Mechanics. A heavy emphasis on the advancement of unsaturated soil mechanics into the practice of geotechnical engineering is evident by her professional service activities.

Houston has a long history of leadership in professional society organizations, particularly through participation in the American Society of Civil Engineers (ASCE), the Geo-Institute of ASCE, and the International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE). She currently serves as the chair of the Unsaturated Soils Committee of the Geo-Institute of ASCE, as a member of the ISSMGE Committee on Unsaturated Soils, and as a member of the National Academies of Science Committee on Geotechnical and Geoenvironmental Engineering.



Paul Johnson, Ph.D., P.E.
Executive Dean
 Ira A. Fulton Schools of
 Engineering
Professor
 Civil, Environmental &
 Sustainable
 Engineering
Environmental Engineering

Paul Johnson is the Executive Dean in the Ira A. Fulton Schools of Engineering and a professor in the School of Sustainable Engineering and the Built Environment.

He received his Ph.D. and M.A. in Chemical Engineering from Princeton University and B.S. in Chemical Engineering from University of California, Davis.

Prior to joining ASU in 1994, he was a Senior Research Engineer at the Shell Oil Westhollow Technology Center. His teaching, research and professional activities focus on the application of contaminant fate and transport fundamentals to subsurface remediation and risk assessment problems.

Johnson received the AEHS Academic Career Recognition Award in 2006 and CERF Charles Pankow Award for Innovation Finalist in 2005.

Johnson is also editor-in-chief for the National Ground Water Associations journal *Ground Water Monitoring and Remediation*.



Kamil Kaloush, Ph.D., P.E.
Associate Professor
 Civil, Environmental &
 Sustainable Engineering
Pavements and Materials

Kamil Kaloush is an associate professor in Civil, Environmental and Sustainable Engineering, affiliate faculty in the School of Sustainability, and Co-Director of the National Center of Excellence on SMART Innovations (www.asuSMART.com).

He holds a Ph.D. degree specializing in pavements and materials from Arizona State University. He is a registered Professional Engineer, and has over 20 years of experience as a consulting engineer in pavement research.

Kaloush is a member of several professional organizations and has over 60 publications in his field. He is the chair of the Transportation Research Board subcommittee on Pavement Materials and the Urban Climate; a member of the Civil Engineering Examination Committee, National Council of Examiners for Engineering and Surveying; and co-advisor for the ASU-ASCE student chapter.

In February, Kaloush was recognized and honored with the 2009 Community Service Award, given by the joint ASU, ADOT, Industry and Local Government Pavements/Materials Conference committee.



Dean T. Kashiwagi, Ph.D., P.E.
Professor
 Del E. Webb School of
 Construction
Project Management

Dean Kashiwagi, is a professor in the Del E. Webb School of Construction, Director of the Performance Based Studies Research Group (PBSRG), and the creator of the Performance Information Procurement System (PIPS) and the Performance Information Risk Management System. This state of the art delivery structure/processes has minimized management/risk management functions up to 90%, increased vendor profit as much as 100%, and increased performance to 98%. Kashiwagi has generated over \$7M in grants over 15 years, and successfully run over 600 project tests, delivering over \$2B of services.

Kashiwagi is an accomplished author of over 150 refereed conference and journal papers and is a registered engineer in eight states. He was awarded a Fulbright Scholar in July 2008 thru May 2009 to teach and develop project management program and satellite research at the University of Botswana.

In 2005, he was the recipient of the CoreNet Global Innovation of the Year Award for the research being tested at Harvard University and in 2001 The Pono Technology Award was given to the State of Hawaii for implementation of PIPS. Kashiwagi's research has also expanded to the Netherlands (1.3B Euros test) and preliminary plans for the future include bringing the technology/research to Malaysia, Australia, Japan, and China.



Edward Kavazanjian, Jr., Ph.D., P.E., G.E.
Associate Professor
Civil, Environmental &
Sustainable Engineering
Geotechnical Engineering

Edward Kavazanjian is a geotechnical engineer with 20 years of experience in engineering practice and 12 years of university teaching experience. His research and teaching interests include geotechnical earthquake engineering, analysis and design of waste containment systems, and the emerging area of biogeotechnical engineering.

In 2009, Kavazanjian was awarded the Ralph B. Peck Award by the American Society of Civil Engineers (ASCE) for outstanding contributions to the geotechnical engineering profession through the publication of a thoughtful, carefully researched case history on landfill engineering. He was also selected as Engineering Educator of the Year by the Phoenix chapter of the National Society of Professional Engineers in 2009.

Kavazanjian is co-author of the Federal Highway Administration guidance document on Geotechnical Earthquake Engineering for Highways and the Environmental Protection Agency guidance document on RCRA Subtitle D (258) Seismic Design Guidance for Municipal Solid Waste Landfill Facilities. He is Vice-President and President Elect of the Geo-Institute of ASCE, representing the 11,000+ geotechnical engineers who belong to ASCE and also a member of the National Research Council Board of Earth Sciences and Resources, where he serves as chair of the standing Committee on Geological and Geotechnical Engineering.



Rosa Krajmalnik-Brown, Ph.D.
Assistant Professor
Civil, Environmental &
Sustainable Engineering
Environmental Biotechnology

Rosa Krajmalnik-Brown is an assistant professor in Civil, Environmental and Sustainable Engineering (CESE). Before joining CESE she was a Postdoctoral Researcher at Biodesign working in the Center for Environmental Biotechnology. She received her B.S. (1996) in Industrial Biochemical Engineering from Autonomous Metropolitan University in Mexico City and her M.S. (2000) and Ph.D. (2005) in Environmental Engineering from Georgia Institute of Technology.

Her primary areas of research interest are: biotransformation and fate of environmental contaminants, bioremediation of soil, sediments, and groundwater, the use of microbial systems for bioenergy production with an emphasis on environmental applications of molecular microbial ecology. Another area of research where she applies her molecular microbial ecology expertise is the human intestinal microbial ecology and its relationship to obesity.

Her research has been published in Proceedings of the National Academy of Science, Applied and Environmental Microbiology, Environmental Science and Technology, FEMS Microbiology Ecology and Environmental Microbiology. Krajmalnik-Brown's other research interests include gene evolution of genes involved in biodegradation processes, gene expression, and application of molecular tools to evaluate and monitor environmental engineering systems.



Jason S. Lueke, Ph.D., P.E.
Assistant Professor
Del E. Webb School of
Construction
**Trenchless Construction and
Rehabilitation**

Jason Lueke joined the DEWSC in January of 2009, after spending five years as an Infrastructure Engineer-Project Manager and Trenchless Technology Discipline Lead for Associated Engineering, a medium size consulting company based out of Edmonton, Alberta, Canada.

Prior to his consulting career, he was a project manager with a small open trench and trenchless utility contractor in Calgary, Alberta. He has been involved in numerous projects including water distribution, and wastewater and storm water management; undertaking design services, feasibility studies, value engineering, risk mitigation, and tendering services. He also provided specialized expertise for Associated Engineering across Canada on various trenchless construction methods including horizontal directional drilling, pipe relining, pipe bursting, case borings, and tunneling.

Lueke received his Ph.D. in Civil Engineering, specializing in Construction Engineering and Management, from the University of Alberta, Edmonton, in 2005. He employs a hands-on approach that provides a unique blend of practical and theoretical skills to collaborate and conduct effective research in the construction industry. Lueke plans to concentrate his research activities in trenchless construction and rehabilitation methods with a focus on sustainable design and construction practices.



Michael S. Mamlouk, Ph.D., P.E., FASCE
Professor and Associate Chair
Civil, Environmental &
Sustainable Engineering
Pavement Materials

Michael Mamlouk graduated from Purdue University and has over 30 years of research and teaching experience in the field of pavement materials engineering. Prior to joining ASU, Mamlouk worked at the State University of New York at Buffalo for 5 years. He received his Ph.D. degree from Purdue University in 1979.

Mamlouk's main areas of expertise include pavement design, pavement evaluation and maintenance, and material characterization. He is currently working as the Co-PI of a \$750,000 project funded by the National Cooperative Highway Research Program (NCHRP) dealing with the endurance limit of hot-mix asphalt.

Mamlouk has published numerous technical papers and is actively involved in professional societies such as ASCE, AAPT, TRB and ASTM. He is the main author of the "Materials for Civil and Construction Engineers" textbook, published by Pearson-Prentice Hall. He has worked as a consultant and expert witness to many highway agencies and local industry and is a professional engineer in the State of Arizona.



Larry W. Mays, Ph.D., P.E., P.H., D. WRE, FASCE
Professor
 Civil, Environmental & Sustainable Engineering
Water Resources Sustainability

Larry Mays has been a professor at Arizona State University since 1989, and former chair of the department. He started his academic career at the University of Texas in 1976, and became Director of the Center for Research in Water Resources in 1988. Mays received his Ph.D. in 1976 from the University of Illinois.

His area of research interest is in the use of optimizations and risk/reliability methods for the design and operation of water infrastructure systems to promote water resources sustainability. He is the author, co-author, or editor-in-chief of over 27 books including *Water Resources Engineering and Groundwater Hydrology*; *Applied Hydrology and Hydrosystems Engineering and Management*; *Water Resources Handbook*; *Water Distribution Systems Handbook*; *Hydraulic Design Handbook*; and others. Mays' most recent book is *Urban Water Management in Arid and Semi-arid Regions*, published in 2008 by Taylor and Francis and UNESCO, and presently he is completing *Ancient Water Technology* to be published by Springer.

Among his honors is a distinguished alumnus award from the University of Illinois at Champaign-Urbana. He is a Diplomat, Water Resources Engineering, of the American Academy of Water Resources Engineering and a Fellow of ASCE and IWRA.



Panagiotis 'Takis' Mitropoulos, Ph.D., P.E.
Assistant Professor
 Del E. Webb School of Construction
Construction Accident Prevention

Panagiotis Mitropoulos joined the faculty at the Del E. Webb School of Construction as an assistant professor in August 2004. He has a Doctoral degree in Civil Engineering from Stanford University and a Master of Science degree in Civil Engineering from Virginia Tech. He is a registered professional engineer in Greece. Before joining ASU, Mitropoulos worked for eight years as a Performance Improvement Specialist on large technical projects and as a consultant with Lean Project Consulting.

Mitropoulos teaches courses in Productivity Improvement, Construction Scheduling and Construction Safety. His primary areas of research include accident prevention, high performance crews, and lean production management.

In 2007, Mitropoulos received the NSF Career Award for his research "Safety as an Emergent Property of the Production System: Work Practices and Team Processes of High Reliability Crews."

He is a member of the Lean Construction Institute, the International Group of Lean Construction, and the Construction Research Council.



Barzin Mobasher, Ph.D., P.E.
Professor
 Civil, Environmental & Sustainable Engineering
Cement and Concrete Engineering

Barzin Mobasher, who joined the Ira A. Fulton Schools of Engineering faculty in 1991, has been involved in research and teaching in the area of cement and concrete engineering for more than 25 years. He received his Ph.D. in 1990 from Northwestern University. His specific expertise is in the mechanics of composite materials, the development of new construction materials and the durability of building materials.

Mobasher has published more than 100 peer-reviewed research papers on the mechanics and durability of concrete technology, and has delivered more than 120 technical presentations worldwide.

In 2009 Mobasher was selected as a Fellow of the American Concrete Institute (ACI), one of the most prominent organizations in the concrete technology field. He is a member of the American Society of Civil Engineers (ASCE) and American Ceramic Society and member of the International Editorial Board of *Computers and Concrete*.

Mobasher was the recipient of the ACI Scholarship Award in 1984 and Federal Highway Administration Honorable Mention Award in 1988.



Ram Pendyala, Ph.D.
Professor
 Civil, Environmental & Sustainable Engineering
Transportation Systems Engineering

Ram Pendyala joined ASU in 2006 after spending 12 years on the faculty at the University of South Florida. He received his Ph.D. from the University of California at Davis in 1992.

Pendyala teaches courses in transportation engineering, transportation systems analysis and modeling, and public transportation planning and design. He has conducted more than \$5 million in sponsored research over the past 15 years for a variety of agencies. His research has primarily focused on the development and application of new methods for modeling and forecasting transportation demand and system performance under a wide variety of socio-economic, modal, and land use scenarios.

Pendyala is currently Chair of the Transportation Research Board's Travel Analysis Methods Section, and Vice Chair and Chair-Elect of the International Association for Travel Behavior Research. He has published nearly 100 articles in refereed journals, books, and conference proceedings. He serves as an advisor to various agencies including the Chicago Metropolitan Agency for Planning, Transportation Research Board, US Department of Transportation, and World Bank.

Pendyala has mentored over 50 MS and PhD students. He was named among the top 5% of teachers in the Ira A. Fulton Schools of Engineering for 2008.



Subramaniam (Subby) Rajan, Ph.D., P.E.

Professor
Civil, Environmental &
Sustainable Engineering
Associate Chair
Graduate Program
Structures and Materials

Subby Rajan's teaching and research interests include solid mechanics with emphasis on constitutive modeling, finite element analysis, design optimization and high-performance software development. Currently he is working on research projects sponsored by the Federal Aviation Administration (FAA), the Army Research Office (ARO) and local industries. These projects involve characterization of materials for blast and ballistic mitigation, development of constitutive models and computer simulations, and design optimization to reduce the weight, thickness and cost of body, vehicle and aircraft armor.

Rajan continues to mentor undergraduate, master's and doctoral students and has been recognized for these efforts as CEE's nominee for ASU President's Professor Award.

Selected Publications:
D. Naik, S. Sankaran, B. Mobasher, S. D. Rajan and J. M. Pereira, "Development of Reliable Modeling Methodologies for Fan Blade-Out Containment Analysis. Part I: Experimental Studies", *J of Impact Engineering*, 36:1, 1-11, 2009.

Z. Stahlecker, B. Mobasher, S.D. Rajan and J. M. Pereira, "Development of Reliable Modeling Methodologies for Fan Blade-Out Containment Analysis. Part II: Finite Element Analysis", *J of Impact Engineering*, 36:3, 447-459, 2009



Bruce Rittmann, Ph.D., N.A.E.

Professor
Civil, Environmental &
Sustainable Engineering
Director
Center for Environmental
Biotechnology
Environmental Biotechnology

Bruce Rittmann's research and teaching focus on Environmental Biotechnology, or managing microorganisms to provide services to society. The services include bioremediating pollution of water and soil, and generating renewable bioenergy. This highly inter-disciplinary research links engineering fundamentals with microbial ecology, biochemistry, genetics, geochemistry, and materials.

Rittmann's awards include membership in the National Academy of Engineering, a Fellow of the AAAS, the Huber and Freese Awards from the ASCE, and appointment as a Regents' Professor at ASU. He has more than 420 publications and is on the ISI's List of Most Highly Cited Researchers.

Selected Publications:
Rittmann, B. E. and P. L. McCarty (2001). *Environmental Biotechnology: Principles and Applications*. McGraw-Hill Book Co., New York.

Marcus, A. K., C. I. Torres, and B. E. Rittmann (2007). Conduction-based modeling of the biofilm anode of a microbial fuel cell. *Biotech. Bioengr.* 98: 1117-1182.

Chung, J., R. Krajalnik-Brown, and B. E. Rittmann (2008). Bio-reduction of trichloroethene using a hydrogen-based membrane biofilm reactor. *Environ. Sci. Technol.* 42(2): 477-483.



Kenneth T. Sullivan, Ph.D.

Assistant Professor
Del E. Webb School of
Construction
Construction Estimating

Kenneth Sullivan joined the DEWSC faculty in July 2004 after completing his Ph.D. in Civil and Environmental Engineering at the University of Wisconsin-Madison. Sullivan also has an M.B.A. in Real Estate and Urban Economics, along with M.S. and B.S. degrees in Civil and Environmental Engineering from the University of Wisconsin. His work background includes heavy highway construction and consulting in claims and recovery, delay impacts, and litigation support.

Honors and Distinctions:
Director of Facility Management Research Institute (FMRI).
Secretary of Research for CIB Task Group 61.
Member of IFMA and the Greater Phoenix Education Committee.

Teaching and Research:
Construction estimating;
conceptual estimating;
engineering design; productivity quantification; change order impacts; risk analysis and allocation; best value systems; performance based procurement; facility management; research methods.

Selected Publication:
Hanna, A.S., Chang, C.K., Lackney, J. A., and Sullivan, K. (2007). "Impact of Overmanning on Mechanical and Sheet Metal Labor Productivity." *ASCE Journal of Professional Issues in Engineering Education and Practice*. Vol. 131 (1), pp 22-28.



Enrique R. Vivoni, Ph.D., P.E.

Associate Professor
Civil, Environmental &
Sustainable Engineering
Watershed Hydrology

Enrique Vivoni holds a joint appointment as an associate professor in the School of Sustainable Engineering and the Built Environment and the School of Earth and Space Exploration. He obtained a B.S. in Environmental Engineering, M.S. in Civil and Environmental Engineering and Ph.D. in Hydrology from the Massachusetts Institute of Technology.

Vivoni is well known for his research in watershed hydrology and its linkages with ecological, atmospheric and geomorphologic processes. As a surface hydrologist, he performs research in hydrometeorology, ecohydrology, geomorphology and surface-groundwater interactions. His teaching is centered on surface hydrology and techniques for numerical and field studies.

Vivoni is a recipient of numerous awards including the Most Promising Engineer - Hispanic Engineering National Achievement Award Conference (2007), Presidential Early Career Award for Scientists and Engineers (2008) and U.S. Fulbright-Garcia Robles Scholar (2009). He is an active member of the American Geophysical Union, American Society of Civil Engineer, Geological Society of America and American Meteorological Society.



Paul Westerhoff, Ph.D., P.E.
Professor and Interim Director
 Civil, Environmental &
 Sustainable Engineering
Environmental Engineering

Paul Westerhoff joined ASU and CESE in August 1995 and was promoted to full professor as a University Exemplar in 2007. He was appointed Chair of Civil, Environmental and Sustainable Engineering in 2008 and Interim Director of the School of Sustainable Engineering and the Built Environment in 2009.

He has led the environmental and water faculty groups in the department for the past 6 years. Westerhoff has a strong publication and research record, has garnered wide recognition for his work related to treatment and occurrence of emerging contaminants in water, and has been active in multidisciplinary research. He has lead research funded by AWWARF, USEPA, NSF and local organizations investigating reactions and fate of oxo-anions (bromate, nitrate, arsenate) during water treatment, characterization, treatment and oxidation of natural organic matter in watersheds, formation of disinfection by-products, removal of taste and odor micropollutants and fate of nanomaterials in water. He has over 68 peer reviewed journal article publications and has been involved in over 200 conference presentations. He belongs to ASCE, AWWA, AEESP, ACS, IOA, IWA, AWPCA, and IHSS and serves on numerous voluntary committees for these organizations.

Westerhoff has received several research awards including the 2005 ASCE Walter L. Huber Research Award and the 2006 WEF Paul L. Busch Award.



Avi Wiezel, Ph.D., P.E.
Associate Professor
 Del E. Webb School of
 Construction
Construction Engineering

A faculty member of ASU since 1996, Avi Wiezel holds a M.Sc. degree in structural engineering and a M.Sc. and Ph.D. in building science.

Prior to becoming a professor, Wiezel held several managerial positions with construction and engineering firms in Europe and the Middle East. His activities resulted in continuous productivity improvements averaging 15% per year for the units in which he was in charge. Wiezel taught in four languages on three continents (Asia, Europe, and America) to students of all levels, ranging from vocational education to doctoral students.

He ranks among the top 5% of best teachers in the Ira A. Fulton Schools of Engineering and is the recipient of the Outstanding Faculty Member Award (2005).

Wiezel is a true interdisciplinary researcher, with interests ranging from computer modeling of human skills in construction, to engineering education, and leadership. He served as the President of the Faculty Senate in the School of Engineering and as the Chair of the Education Committee of the Technical Council on Computers and Information Technology (TCCIT) in the American Society of Civil Engineers (ASCE).



Eric Williams, Ph.D.
Assistant Professor
 Civil, Environmental &
 Sustainable Engineering
Earth Systems Engineering

Eric Williams is assistant professor with a joint appointment between the School of Sustainable Engineering and the Built Environment and the School of Sustainability. He is Research Director of the Center for Earth Systems Engineering and Management. His research interests include life cycle assessment, industrial ecology, information technology, and energy and water systems.

Much of Williams' work addresses the environmental assessment and management of information technology. Life cycle studies of microchips and computers have shown that the manufacturing phase is more environmentally intensive than previously thought. The management of electronic waste (e-waste) is under investigation via a project taking a global perspective on environmental, social and economic issues. Williams also works on managing implications and applications of Information Technology for energy demand such as telecommuting, e-commerce and energy smart homes.

Energy related work includes life cycle assessment of emerging energy technologies such as photovoltaics and biofuels. He also works on combining thermodynamic and energy approaches with empirical modeling to assess long-term trends and future potential of energy technologies.



Matthew W. Witzczak, Ph.D., P.E.
Professor
 Civil, Environmental &
 Sustainable Engineering
Pavement Design

Matthew Witzczak is an internationally recognized expert in the area of highway and airfield pavements. He served on the faculty of the University of Maryland for 26 years before becoming professor of Civil Engineering at ASU in 1999.

Witzczak is co-author, with the late Professor E.J. Yoder, of the textbook, "Principles of Pavement Design", and has authored well over 120 technical papers and reports in the area of pavement design, rehabilitation, materials and management systems. He has been involved in numerous worldwide consulting activities and has been invited to speak in all five continents. Witzczak has also testified before the U.S. Senate Subcommittee on national transportation issues. At ASU, Witzczak has been the research team leader in developing the 2002 Pavement Design Guide for flexible pavements, and a national study for the development of a simple performance test for asphalt mixtures.

Honors & Distinctions:
 2002 Asphalt Institute Honor Roll, ASCE invited co-author on "The History of Asphalt in the U.S." to commemorate the 75th year Anniversary of ASCE as a technical society, Walter J. Emmons Award of the Association of Asphalt Paving Technologies, 2008 Thomas B. Deen Distinguished Lectureship Award.



Claudia E. Zapata, Ph.D.
Assistant Professor
 Civil, Environmental &
 Sustainable Engineering
Geotechnical Engineering

Claudia Zapata received her Ph.D. from Arizona State University in 1999. Her research interests are in the areas of characterization and modeling of fluid flow and volume change behavior of unsaturated soils and lab/field instrumentation. She has particularly focused on the characterization of problem soils; applications related to the behavior of pavement subgrades due to dynamic loading and environmental conditions; and the assessment of fluid flow and volume change of soils under slabs-on-ground residential foundation systems.

Zapata is currently working on three main research projects: The implementation of the Mechanistic-Empirical Pavement Design Guide for the Maricopa Department of Transportation; the study of cracked expansive clays for the National Science Foundation; and the development of an Atlas of unsaturated soil properties for the 50 states for the National Cooperative Highway Research Program.

Zapata is the author of 20 technical publications focusing on expansive soils, unsaturated soil properties predicting models, and environmental effects on pavement design. She was featured in the May/June 2009 ASCE Geotechnical Engineering magazine, Geo-Strata, as a co-author of the article entitled "Application of Unsaturated Soil Mechanics to Pavement Subgrade Design."

DEWSC at homecoming



CESE competes in the Pacific Southwest Regional Conference in Hawaii



Friends of Civil Engineering Annual Mixer





Ramzy Kahhat Abedrabbo, Ph.D.

Assistant Research Professor

Ramzy Kahhat is a researcher at the Center for Earth Systems Engineering Management at Arizona State University (ASU). He completed his B.S. in Civil Engineering from the Pontificia Universidad Catolica del Peru (PUCP) and his M.S.E. and Ph.D. in Civil and Environmental Engineering from ASU. Kahhat is currently working on the NSF project: "Assessing and Managing the Sustainability of Global Reverse Supply Chains: The Case of Personal Computers." The main purpose of the project is to understand the e-waste flow in the United States and its international implications. In the past, in Peru, Kahhat worked as an environmental consultant and university instructor.



Absar Alum, Ph.D.

Assistant Research Professor

Absar Alum has been with Civil, Environmental and Sustainable Engineering since 2001. In August 2006 he was appointed assistant professor research. His research is in the area of health related environmental microbiology and toxicology. The primary area of his expertise is microbiology/engineering interface. His work on the rapid microbial detection methodologies has resulted in new generation of biosensor. Alum is active in various professional organizations including the American Society for Microbiology.

Recently he was selected as Visiting Resource Person for developing countries under UNESCO-ASM -VPR program.



Paul Dahlen, Ph.D.

Assistant Research Professor

Paul Dahlen is an assistant professor research in Environmental Engineering. He received a B.S. in Hydrology from the University of Arizona, an M.S. and Ph.D. in Civil and Environmental Engineering from Arizona State University, and has spent over 7 years working in industry as a hydrologist/environmental engineer.

Dahlen's research interests focus on the assessment and remediation of hydrocarbon impacts to soil/groundwater. Specific research includes leaking underground storage tank impacts on groundwater resources, hydrocarbon vapor intrusion processes, oxygen injection technologies for use in in-situ permeable reactive barriers, and the use of in-situ thermal remedial applications for hydrocarbon impacted soils/groundwater.



Hugo Destailats, Ph.D.

Associate Research Professor

Hugo Destailats joined CESE in 2006 as an assistant professor research. He holds a joint appointment with the Lawrence Berkeley National Laboratory. Destailats earned his Ph.D. in Chemistry at the University of Buenos Aires (Argentina), and was a postdoc at the California Institute of Technology. Destailats studies various aspects of environmental chemistry including the fate and transport of organic pollutants, the characterization of pathways of human exposure to toxic environmental contaminants and the development of advanced remediation technologies for water and air cleaning. A recent focus of his work has been the study of chemical transformation of pollutants in the indoor environment. He is the author of more than 30 journal articles.





Mohamed El-Basyouny, Ph.D.
Assistant Professor Research

Mohamed El-Basyouny, an assistant professor research in CESE, is currently working on NCHRP 9-22 to develop pay adjustment factors based on Performance of flexible pavements and NCHRP 9-44A "Validating an Endurance Limit for HMA Pavements". El-Basyouny was recently appointed to the committee on Pavement Design for the Transportation Research Board (TRB) of the National Research Council (NRC).

He has actively participated in several NCHRP Projects such as NCHRP 1-37A, 1-40D and NCHRP 9-19. His research experience focuses on flexible pavement mechanistic-empirical design, mix design, material characterization and performance testing, field calibration-verification studies and development of analysis and user-friendly software for the asphalt pavement analysis.



Mohamed El-Zein, Ph.D.
Faculty Research Associate

Mohamad El-Zein is a faculty research associate in Civil, Environmental and Sustainable Engineering. He received a Ph.D. in Civil and Environmental Engineering from Arizona State University and M.S. in Health Sciences-Clinical Chemistry from State University of New York at Buffalo. His areas of interest include biosensor optimization for rapid detection and characterization of bacterial biochemical activities in various water environments and research and development of rapid bacterial detection systems; designing methods; setting up procedures, and performing quality control and assurance for bacterial biosensors.



Kiril D. Hristovski, Ph.D.
Assistant Professor Research

Kiril Hristovski is an assistant professor research in the School of Sustainable Engineering and the Built Environment. He received his Ph.D. degree in Civil and Environmental Engineering and M.S. degree in Technology (Environmental) from Arizona State University. He also holds a Bachelors degree in Chemical Engineering from University of Sts "Cyril and Methodius" in Macedonia. His research interests are in the areas of applications and implications of nanotechnology, emerging water contaminants, solid and hazardous waste, and emergency management. Hristovski is the recipient of the Presidential Award for Outstanding Academic Achievement presented by the President of the United States, Mr. George Bush Sr.

Hristovski will be starting at the ASU Polytechnic Campus in Fall 2009.



Della M. Roy, Ph.D., N.A.E.
Research Professor

Della Roy holds a part-time joint appointment in the School of Sustainable Engineering and the Built Environment and the School of Mechanical, Aerospace, Chemical and Materials. She is also a Professor Emerita of Materials Science at The Pennsylvania State University where she has held various faculty appointments through the years.

Her various research and teaching interests include the areas of cementitious materials, chemically bonded ceramics, biomaterials research and radioactive waste management. Areas of research encompass materials synthesis, processing, characterization in inorganic, ceramic, cement and mineral systems; phase equilibria and thermodynamic properties; hydrothermal synthesis; chemically bonded ceramics; biomaterials synthesis; nano- and micro-structural design, and durability of materials.

Roy has authored or co-authored some 435 papers, and 10 edited books. She is Founding Editor of the journal Cement and Concrete Research of which she served as Editor-in-Chief for 34 years. She has received numerous awards and honors: Elected member of the National Academy of Engineering and the World Academy of Ceramics. She has also received the Jeppson Medal, Copeland Award, and Bleininger Award of the American Ceramic Society.



Lecturers



Kraig Knutson, Ph.D., a senior lecturer in the DEWSC joined the DEWSC team in 1998. He owned and operated an electrical contracting business for 9 years and worked as a journeyman / foreman for several electrical contractors. He is a Certified Professional Constructor (CPC), has his Electrical Journeyman's Certificate, and Electrical Contractor's License (State of Arizona).

Knutson has a Ph.D. in Industrial Engineering from Arizona State University (1998) and received his Master of Science Degree in Construction from the Del E. Webb School of Construction (1995).

Teaching and research include historical construction methods, infrastructure security and application of industrial engineering techniques to construction processes.



Christopher Lawrence, Ph.D., studied three years of architecture before earning a B.S.C.E. at Lawrence Technological University in 1994. Master's and Doctoral studies at ASU followed with a specialization in Geotechnical Engineering.

His Ph.D. studies and private sector employment focused on the design, development and fabrication of advanced soil testing systems and unsaturated soils theory. In January 2000, Lawrence began an adjunct and associate teaching position at ASU in Civil, Environmental and Sustainable Engineering (CESE) and the Del E. Webb School of Construction (DEWSC). After completing his Ph.D. in 2004, he entered his current lecturer position in 2005.

Lawrence teaches many different courses and has now instructed much of the technical core in both CESE and DEWSC. As a lecturer, he is allowed to strongly focus on teaching and advising as well as leading CESE student groups.



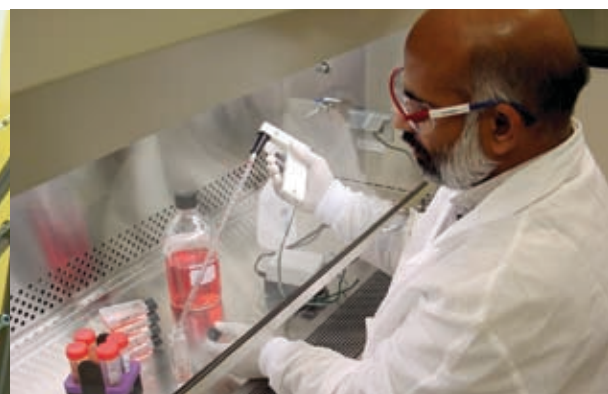
Brooke Mayer, Ph.D., a lecturer in CESE, completed her Ph.D. at ASU in 2008. Her primary emphasis is teaching undergraduate CESE courses, including Statics, Numerical Methods, and Introduction to Environmental Engineering. She is also involved with the ASU student chapter of the American Society of Civil Engineers (ASCE).

Mayer recently completed several studies related to the removal and inactivation of microbial pathogens from drinking water using enhanced coagulation and ultraviolet disinfection, the reduction of disinfection byproducts and their precursors using titanium dioxide photocatalysis, and innovative strategies to achieve low total phosphorus concentrations in high water flows.



Edwin C. Weaver, P.E., a senior lecturer in DEWSC, teaches and develops graduate and undergraduate courses in the Concrete Industry Management and Construction Management degree programs. Before moving to Arizona, Weaver was on the faculty in the Construction Engineering and Management program at North Carolina State University from 2000-2007 and was recognized by the department with the 2006-2007 Kimley-Horn Faculty Award for most outstanding faculty member.

Research areas of interest include Contracts and Specifications for Concrete Construction, Concrete Paving for Airfields and Roadways, and Safety during Concrete and Masonry Construction Operations. Weaver is a licensed Professional Engineer (PE) in Arizona and North Carolina.



Del E. Webb School of Construction – Faculty Associates

The faculty associates are a well educated and exceptionally talented group; derived from diverse and unique backgrounds. Individually and as a group, they are exceptionally successful, with many combined years of knowledge and experience. These men and women operate in the capacity of owners, CEO's and project managers of Arizona's top construction companies. Others are consultants and partners in law firms. All are held in high regard by their students, as reflected in their teaching evaluations at the end of each semester. The faculty associates offer a wealth of knowledge, passed on to students in the classroom. Students taught by faculty associates have the benefit of learning about real-world experiences and issues from people working directly in the real world.

Faculty Associate	Title	Company
Christopher E. Aulerich (P.L.S.)	Owner, President and CEO	Brady-Aulerich & Associates
Neil Barton	Project Manager	City of Goodyear
Steve Basila	President & COO	Pulice Construction
James Bosshart	Instructor	Gateway Community College
Brien Brenfleck	Safety Engineer	Sundt
Duane Church	Construction Manager	Hunt
Richard Crowley	Director of Client Services	Kitchell
Veronica Davis	Project Manager	Southwest Architectural Builders
Edward Fancher	Principal	Fancher Bonding
Mark Felder	Adjunct Faculty	Gateway Community College
Danielle Fereleto	Director of Marketing	Wespac Construction, Inc.
Thomas Gusich	Project Manager	University Mechanical Engineering Contractors
Mike Hansberger	Special Projects Coordinator	CS & W Contractors, Inc.
Robert Meyers	Vice President	CS & W Contractors, Inc.
Wayne Oliver	Corporate Director, Compliance and Affirmative Action	Sundt
Bill Owen	Mechanical Estimator	University Mechanical, ASU
Todd Peterson	CEO	CS & W Contractors, Inc.
Eric Petrie	Associate	Holmwright
Matt Pierce	Associate	Warner Angle Hallam & Formanek PLC
Kenneth Ricker	Co-Founder and Principal	Ricker, Atkinson, McBee & Associates
Vivek Sharma	Associate	Kitchell
Michael Smith	Construction Engineering Manager	Terracon
Scott Thomas	Controller	McCarthy Building Company
Clinton Wilkins	Arizona Sales Manager	Phoenix Cement Company
James Willson	Consulting Engineer	Arizona Cement Association

Civil, Environmental and Sustainable Engineering – Faculty Associates

Faculty Associate	Title	Company
Christopher E. Aulerich (P.L.S.)	Owner, President and CEO	Brady-Aulerich & Associates
Javid Bari	Pavement Design Engineer	Arizona Department of Transportation
Paul Basha	Senior Traffic Engineering Manager	Morrison-Maierle, Inc.
Simon Ghanat	Ph.D. candidate, CESE	Arizona State University
Robert Hinks	Associate Professor	Arizona State University Polytechnic Campus
Garry Jaggars	Project Manager	City of Phoenix
Dallas Kingsbury	Instructional Lab Manager	Arizona State University
Zach K. Stahlecker	Engineer	The Boeing Company
Brent Travis	Ph.D. candidate, CESE	Arizona State University

Affiliated faculty hold an appointment in one unit (the primary unit) and are invited to serve in a faculty role in another unit, center, program, or institute (the secondary unit).

Affiliated Faculty

Affiliated Faculty	Title	Department
Aditi Chattopadhyay	Professor	School of Mechanical, Aerospace, Chemical and Materials Engineering
Matthew P. Fraser	Associate Professor	School of Sustainability
Jay S. Golden	Assistant Professor	School of Sustainability
Hanqing Jiang	Assistant Professor	School of Mechanical, Aerospace, Chemical and Materials Engineering
Marc P. Mignolet	Professor	School of Mechanical, Aerospace, Chemical and Materials Engineering
Pedro D. Peralta,	Associate Professor	School of Mechanical, Aerospace, Chemical and Materials Engineering

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