

A large, modern multi-story building with a facade of horizontal metallic slats and glass windows. The building is set against a blue sky with a geometric pattern of overlapping triangles. The ASU logo is visible on the upper part of the building.

SCHOOL OF **sustainable engineering**
and **the built environment**

delivering
sustainable
solutions

Dean
Paul C. Johnson

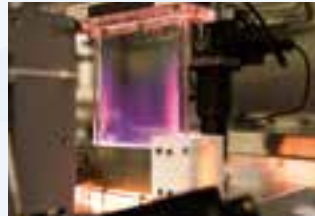
**Transcending
the
traditional**

**Focusing on the
student experience
and student success**

**Inspiring
future
engineers**

**Pursuing
use-inspired
research**

**Attracting
top
faculty**



**school of
sustainable
engineering
and the built
environment**

School Director
G. Edward Gibson, Jr.

Biofuels
Waste conversion to energy
Public health-technology-environment interactions
Microorganism-human health connections
Infrastructure and product lifecycle analysis
Earth systems engineering
Water purification
Resource-climate interactions
Indoor air quality
Sustainable Construction
Transportation Materials And Systems
Project Performance
Underground Infrastructure
Construction Management

**school of
computing,
informatics, and
decision systems
engineering**

School Director
Ronald G. Askin

Personalized learning
Educational gaming
Energy-efficient data storage and computing
Health informatics
Haptic interfaces
Assisting devices
Health care system logistics
Information assurance
Production logistics
Artificial intelligence
Transportation
Production logistics

**school of electrical,
computer and
energy engineering**

School Director
Stephen M. Phillips

Photovoltaics
Power and energy systems
Biosignatures discovery automation
Wireless implantable devices
Sensors and signal processing
Flexible electronics
Power grid management and stability
Sensors and sensing

**school for
engineering of
matter, transport
and energy**

School Director
Kyle Squires

Personalized learning
Engineering education
K-12 STEM
Electrical energy storage
Thermal energy storage and conversion
Energy production separations
Therapeutics and bioseparations
Rehabilitation and robotics
Adaptive and intelligent materials
High-performance computing simulations
Atmospheric processes

**school of biological
and health systems
engineering**

School Director
Marco Santello

Medical diagnostics
Rehabilitation
Neuroengineering
Biomaterials and therapeutics delivery
Synthetic and systems biology
Healthcare technology

polytechnic campus

School Director
Ann McKenna

Air Traffic Management
Air Transportation Management
Applied Science
Environmental Resource Management
Graphic Information Technology
Industrial and Organizational Psychology
Information Technology
Manufacturing Engineering
Professional Flight
Technological Entrepreneurship and Management
Aviation Management and Human Factors
Environmental Technology Management
Global Technology and Entrepreneurship
Management of Technology
Simulation, Modeling, and Applied Cognitive Science, Ph.D.



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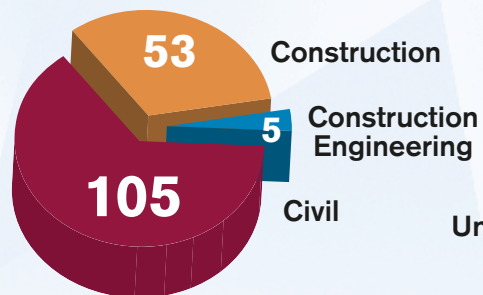
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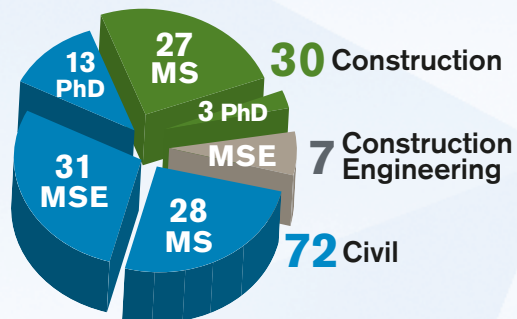


at a glance

Undergraduate Degrees Conferred:



Graduate Degrees Conferred:



Total Scholarships Awarded 2014: **\$314,689**

\$240,746 Construction
\$73,943 Civil and Environmental

National Academy of Engineering Members:

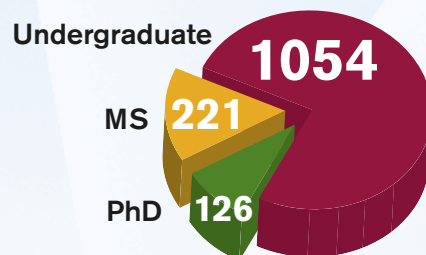
Edward Kavazanjian, Jr.
Bruce Rittmann

National Academy of Construction Members:

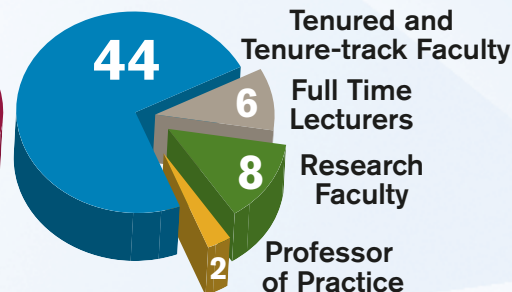
G. Edward Gibson, Jr.
William Badger (*emeritus*)



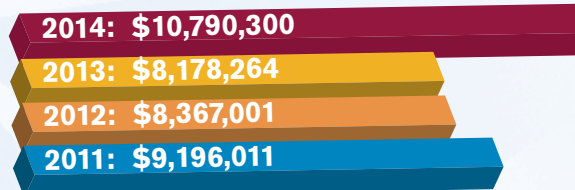
Enrollment



Faculty



SSEBE Research Expenditures



ASU Charter – 2014 and beyond

ASU is a comprehensive **public research university**, measured not by whom it excludes, but by **whom it includes** and how they **succeed**; advancing **research and discovery** of public value; and assuming **fundamental responsibility** for the economic, social, cultural and overall health of the **communities** it serves.

Mission

Demonstrate **leadership** in academic excellence and accessibility

Establish **national standing** in academic quality and impact of colleges and schools in every field

Establish **ASU as a global center** for interdisciplinary research, discovery and development by 2020

Enhance our local impact and social **embeddedness**



Greetings! 2014 was again a fruitful year for our students, alumni, staff and faculty as we have worked hard to foster an environment that helps us meet our strategic objectives. As you can see on the facing page, ASU has recently published a new Charter and guiding Mission & Goals for the next five years. This annual report gives many indications that we are aligned with and making strides in addressing this broad new vision.

Our students have demonstrated their technical and leadership capabilities, winning a number of prestigious awards and competing very successfully at regional and national competitions. During 2014, we matriculated 272 graduates with these students going to work for many of the best engineering and construction firms in the country. We had record enrollment this past fall, with 1,054 undergraduates and 337 graduate students. Perhaps most importantly, our students continue to engage in helping our local community, region and the world in a number of outreach activities.

Over the past year we successfully consolidated staff, programs and a number of faculty located in three buildings into College Avenue Commons (CAVC), which will help in improving our efficiency and enhance our national standing as we attract top new faculty members and students to our programs. We increased efforts to provide more advising to our students to help with retention and to enable timely intervention to help struggling young engineers and constructors; these changes have helped increase our freshman retention to its highest rate in our history.

Our alumni, young and old, continue to do amazing things in their careers as they provide wide-ranging leadership on a variety of issues. They, along with other professionals in our community, have been very generous with their time, talent and treasure in supporting many of the things that are essential to our programs. We continue to actively engage locally and nationally through the Del E. Webb School of Construction (DEWSC) Industry Advisory Council under Dr. Chasey's leadership, and Industry Advisory Boards for Civil, Environmental and Sustainable Engineering (CESE) and Construction Engineering under Dr. Hjelmstad's and Dr. Ariaratnam's leadership. As a testament to this interest and involvement, we had 43 companies visit the CAVC building in fall 2014 recruiting our students.

Our faculty members continue to win teaching, research and service awards. They expended over \$10.7 million on cutting-edge research during the calendar year—an increase of over 30 percent over 2013. Ed Kavazanjian and Paul Westerhoff, along with a number of others in SSEBE, competed as finalists for the prestigious NSF ERC research award program in October, with results announced in early 2015. Our national reputation for discovery, research and creativity is leading to many visits from peers representing other universities, research agencies and industry.

We continue to work on our curricula and on ways to engage our students in engineering and construction opportunities from their first day on campus. Keith Hjelmstad, Barzin Mobasher, Amie Baisley and Chris Lawrence have gained traction on the promising re-design of our engineering mechanics courses; plans are in place to expand this further. The DEWSC faculty has significantly changed the CM curriculum to address accreditation requirements while working to better prepare our students for a changing work environment. We recently were given final approval to offer an on-line MSE in Sustainable Engineering beginning in Fall 2015.

We continue to actively recruit outstanding faculty members and during 2014 welcomed Steven Ayer, Jaewon Jang, Klaus Lackner, and Kristen Ward to our faculty ranks. The coming year promises more hiring, as we are pursuing faculty members for as many as five additional positions.

We also welcome to SSEBE the staff and researchers from the Arizona Center for Algae Technology and Innovation (AzCATI) and the newly formed Center for Negative Carbon Emissions (CNCE). These programs are providing significant resources toward addressing the challenges of two emerging areas of international concern, namely biofuels as a cost-effective alternative to hydro-carbon fuels and reduction of carbon dioxide from the atmosphere.

All of the efforts outlined above are increasing our national and international standing. A number of these initiatives, along with our on-line courses and other entrepreneurial programs are leading to opportunities for global outreach and development.

I am very optimistic about the future, and feel privileged to be SSEBE School Director. We have a great faculty and staff and would love to visit with you if you are in the Tempe area, so please contact us and come by.

G. Edward Gibson, Jr., PhD, PE

Professor and Sunstate Chair

Director, School of Sustainable Engineering and the Built Environment

Civil, Environmental & Sustainable Engineering (CESE)



Keith D. Hjelmstad, PhD
Professor and CESE Program Chair

Last year Edd Gibson asked me to take on the task as serving as the Program Chair for the Civil, Environmental and Sustainable Engineering program. This past July I officially grabbed the reins and I have been enjoying the wild ride ever since. This is my first opportunity to contribute to the SSEBE Annual Report.

Let me first acknowledge my predecessor as program chair, Dr. Mike Mamlouk, who has led

this program with integrity, skill, and grace through the past several years—a time that witnessed a substantial transformation of ASU, the Ira A. Fulton Schools of Engineering, and the birth of the School of Sustainable Engineering and the Built Environment. I very much appreciate Mike's efforts to help bring our program to its present position as an emerging force in civil, environmental, and sustainable engineering in the U.S. From almost any angle the future looks great. I am especially indebted to Mike for his willingness to shepherd our program through the next ABET accreditation process, which will culminate next fall with a visit from our program evaluator. Thanks Mikel!

Over the past few months I have spent time getting to know our programs, our people, and our stakeholders a little better. I have been at ASU for nearly seven years (after a wonderful twenty-five years at the University of Illinois), but I am still fairly new to SSEBE. At every turn, I find evidence of deep strength and a solid commitment to doing what it takes to advance to prominence in our field. We have made outstanding faculty hires and we are blessed with a great and supportive staff. I look forward to working with our external advisory board members and other representatives of our industry, many of whom have shown remarkable loyalty to the program.

Over the past few years I have had the personal pleasure of working very closely with our undergraduate students as they pass through our sophomore-level mechanics courses. One distinct benefit of teaching at that level is that you get to know almost all of the students. I am very pleased to say that we have outstanding students in our program, the best of whom can stand toe-to-toe with any student in the country. Our student numbers are on the rise—always a challenge to manage, but oh what promise it portends as we inhabit our role as one of the largest producers of civil engineering graduates in the country.

The next few years will be important ones for our program. I am looking forward to helping to lead the charge.

Del E. Webb School Of Construction (DEWSC)



Allan D. Chasey, PhD, PE, LEED AP
Associate Professor and DEWSC Program Chair

The Del E. Webb School of Construction Programs are building an exciting place to learn and grow!

We moved into our new home (College Avenue Commons) in July, continue to hire new faculty, are seeing increased numbers of students joining the program, and have increased our engagement with our Industry partners through an active Industry Advisory Council (IAC). Our OSHA Training Institute is in its 2nd year and continues to grow, and the Construction in Indian Country (CIIC) program is making a significant impact in Indian country through the Annual Conference and the CIIC Student Organization.

First, our new building: Located on the corner of 7th Street and College Ave, across from the Fulton Center, the facility houses the DEWSC programs, computer labs, BIM labs, and state of the art classrooms to enable the School to expand beyond our borders. Without our many donors, this would not have been possible. Please come and visit us this year and see the impact that we are making on our next generation of constructors.

Second, our new faculty members: DEWSC hired one new professor this year who will provide the School with new research capability in the construction technology arena, specifically BIM. You can find out more about all our great faculty reading their bios in this report and meeting them at our IAC meetings.

Third, our IAC: Our industry partners through our Industry Advisory Council have assisted us to strengthen our strategic plan to grow the program. Part of that plan is to develop a strong recruiting outreach which included a new full-time recruiter, Whitney Hatfield. Whitney is already integrating recruiting plans into the School to help us increase our student population through social media, which targets the younger generation. Even with this new energy for recruiting, we continue to need your assistance as we make DEWSC the best construction program in the US.

Our OSHA Training Institute, the Western OSHA Education Center, offers a full schedule of occupational safety and health training for private and public sector personnel, organizations and agencies. The new Safety and Health Professional Certificates program is designed for those with safety responsibilities who wish to improve their practical knowledge while earning a valuable credential. If you need updated training or would like to explore any of our certificate programs, contact Jim Rogers at <http://asuotiec.org>.

The Construction in Indian Country program continues to grow. Jerome Clark, the CIIC Program Manager, has developed a strong program to support our native students to recruit and retain them into the DEWSC. The CIIC Annual Conference is growing, pressing us to find larger venues to support the attendees and improve the construction process on tribal lands.

Additionally, each year our students continue to show very well at the annual Associated Schools of Construction Student Competition near Reno, NV. Your direct support was evident in 2014 allowing us to send over 60 students, one of the largest contingents ever from DEWSC, exposing them to the construction competition.

Even with these program improvements, we still face our challenges, especially in increasing our student population. We have been fortunate to hire a full time recruiter with the generous support of an alumnus, and she is working diligently to help us meet our goal of a 10% student growth each year. While we continue to graduate bright, young students into the profession, without a good recruiting effort each year, the number of graduates could be reduced while the need for new hires increases.

I want to thank you for all your support in the past, but your continued support is vital as we improve the School - volunteers in the classroom, faculty associates, site visits, additional scholarships, internships and recruiting assistance. The challenges are great, but that is what has made the Del E. Webb School of Construction one of the top construction programs. I look forward to working with you to move the School forward in 2015!

Construction Engineering



Samuel T. Ariaratnam, PhD, PE, PEng
Professor and Construction Engineering Program Chair

I want to provide you with an update of the Construction Engineering program. We are experiencing exponential growth in enrollment at both the undergraduate and graduate level. Currently, we have 75 undergraduate students and close to 25 graduate students pursuing Master's Degrees. I fully anticipate enrollment to exceed 100 undergraduates in the fall of 2015. Our program is an educational experience that combines elements of Civil

Engineering and Construction Management. Exposure to engineering design and management of projects provides our graduates solid insight into the entire construction process. The program emphasizes planning, design, and management for the construction of infrastructure projects including bridges, airports, pipelines, and other systems that are vital to our nation. This year is especially important because we will apply for our initial ABET Accreditation. ABET evaluators will be evaluating all of the Engineering programs in the Ira A. Fulton Schools of Engineering this fall.

To date, we have graduated nine Bachelor's degrees and twelve M.S.E. students in Construction Engineering. Every graduate of the program either found full-time employment in the industry prior to graduating or went on to pursue an advanced degree. Our internship program exposes our students to real-world practice, which combined with course work, provide an outstanding educational experience. Producing high-quality Construction Engineers is imperative as our nation tries to address an infrastructure network in varying stages of deterioration.

I want to thank everyone that has supported the program over the past year. In particular, I thank our Industry Advisory Board consisting of eleven individuals representing owners, engineering design, and construction stakeholders. This group of industry leaders plays a vital role in assisting me in shaping the Construction Engineering program to ensure that we produce the best possible graduates and leaders in the industry. It is important to me that all of our graduates are well positioned to pursue either employment or continue on with post-graduate studies.

The move to our new building this past July now provides an excellent venue for delivering a world-class education in state-of-the-art classrooms. I invite you to come to College Avenue Commons for a tour of our facilities. The future looks bright and I welcome feedback on ways to continue improving Construction Engineering at Arizona State University.

Graduate Program



Peter Fox, PhD, PE
Professor and Graduate Program Chair

The School of Sustainable Engineering and the Built Environment graduate degree programs encompass Civil, Environmental and Sustainable Engineering (CESE), Construction Management (CON) and Construction Engineering (Con Eng) - CESE MSE, CESE MS, CESE PhD, CON MS, CON PhD and Con Eng MSE.

We continue to receive a record number of applications during the Fall 2014 semester, enabling us to select highly qualified applicants to our programs. The high

quality of our applicant pool was most apparent through our successful pursuit of PhD Fellowships. The School of Sustainable Engineering and the Built Environment was awarded 7 Dean's Fellowships and several Science Foundation Arizona Fellowships. Only 23 Dean's Fellowships were awarded throughout all of the Fulton Schools of Engineering so this was quite an accomplishment.

Last year we enrolled more than 120 PhD students for the first time. We have continued to increase the number of enrolled under-represented groups and our goal to make our program more diverse and inclusive is being embraced by our faculty and research sponsors.

The high quality of our research was recognized in the current competition for National Science Foundation Engineering Research Centers. After reviewing hundreds of proposals, the National Science Foundation invited 18 research teams for full proposals. Of these 18 proposals, two were led by SSEBE faculty at ASU and another was co-led by SSEBE faculty. We hope to have good news next year regarding the final outcome on these \$20+ million dollar research centers. Other top universities have been asking to visit us to emulate our formula for success.

During the 2014 calendar year our research expenditures exceeded \$10 million for the first time ever. This funding increase has enabled us to financially support a large number of our MS and almost all of our PhD students either as research assistants or as teaching assistants.

We will have two fully on-line Master's degree programs that should increase our enrollment of MS students. The on-line Master's degree program in Construction Management was re-initiated in 2014 and the on-line Master's degree program in the specialty area of Sustainable Engineering will be initiated in 2015. Combined with the success of our accelerated MS degree program (formerly known as 4+1), we expect to retain more of our best students and increase the number of high quality international students.

New faculty join SSEBE



Steven K. Ayer, PhD

Assistant Professor
PhD, Pennsylvania State University

Joined SSEBE in August 2014

Areas of Research: Ayer's research focuses on leveraging mobile computing technologies to improve the way buildings are designed and access to building information, as well as how students are educated about engineering and construction principles.

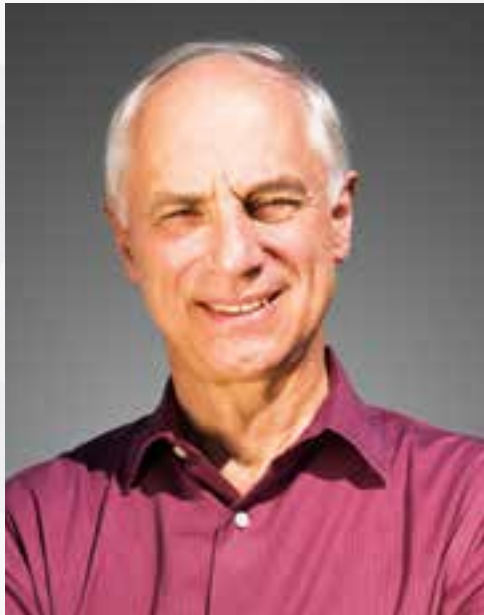


Jaewon Jang, PhD

Assistant Professor
PhD, Georgia Institute of Technology

Joined SSEBE in August 2014

Areas of Research: Jang's research interests include energy-related geotechnics such as methane hydrate production, geological CO₂ sequestration, and nanoparticle application for energy recovery. Jang believes that education is the most powerful solution to building a sustainable world. Most recently, he was an assistant professor at Wayne State University.



Klaus S. Lackner, PhD

Professor
PhD, Heidelberg University, Germany

Joined SSEBE in August 2014

Areas of Research: Lackner's research interests include closing the carbon cycle by capturing carbon dioxide from the air, carbon sequestration and geo-engineering. He was the Ewing Worzel Professor of Geophysics at Columbia University's School of Engineering and Applied Sciences and director of the Lenfest Center for Sustainable Energy at the Earth Institute.

Faculty Honors and Awards

Westerhoff appointed ASU vice provost

Paul Westerhoff has been appointed **vice provost of academic research programming** at ASU. The new position is designed to elevate ASU's efforts to meet the outlined 2020 research goals.

A key part of meeting ABOR's ambitious goal of \$700 million in research expenditures for 2020 includes expanding the number of active research faculty members. Over the past decade, the number of full- or part-time faculty at ASU has expanded to more than 3,150 with more than 130 new tenured or tenure-track faculty joining the university in 2014. In response to these hires, research expenditures and academic achievements have increased. Westerhoff will help project additional faculty growth to meet 2020 goals set by ASU.

"I see this as a new and interesting people challenge," said Westerhoff. "And I look forward to working with the university's deans to establish strategic plans for faculty hires, development of new research facilities and buildings to support our research goals in the long term."



Johnson honored for environmental engineering achievements

Paul Johnson, dean of ASU's Ira A. Fulton Schools of Engineering and professor in its School of Sustainable Engineering and the Built Environment, is the recipient of the **2014 Brown and Caldwell Lifetime Achievement Award** for his contributions to environmental engineering.



Johnson's "remarkable career as a pioneer, inventor and educator" in the field was cited in presenting him the award at the Battelle International Conference on Remediation of Chlorinated and Recalcitrant Compounds in Monterey, California.

His expertise is in determining impacts posed by contaminants in the environment, and developing methods to remedy or reduce the impacts. Specifically, his work focuses on contaminated soil and groundwater remediation and human health risk assessment. His research is the basis for many widely used technologies and regulatory measures on human health risk assessment.

In recognition of his contributions to education, Johnson was named Outstanding Educator of the Year by the Arizona Professional Engineers Society in 2011 and earlier this year received the **Nathan Burbank Environmental Educator of the Year Award** from the AZ Water Association, a nonprofit educational organization serving as the state chapter of the American Water Works Association (AWWA) and the state member association of the Water Environment Federation (WEF). He also received the **Top 5% Teaching Award** from the Ira A. Fulton Schools of Engineering.

Abbaszadegan honored for achievements

Morteza Abbaszadegan, professor, SSEBE, and director NSF Water & Environmental Technology Center, has received certification by Eminence from the American Academy of Environmental Engineering & Scientists as a **Board Certified Environmental Scientist**. Abbaszadegan was also chosen as the **SSEBE Outstanding Instructor for 2014**.



Morteza Abbaszadegan: first row, 2nd from right

Faculty Honors and Awards



CII Outstanding Instructor Award

Dr. G. Edward Gibson, Jr., was selected by the Construction Industry Institute as the twentieth recipient of the **CII Outstanding Instructor of the Year Award**. Gibson is the Director of the School of Sustainable Engineering and the Built Environment at ASU. He is a professor and the Sunstate Endowed Chair in Construction Management and Engineering.

Gibson has been involved with CII in a number of capacities since 1988, serving on over a dozen committees and teams. He developed the CII Project Definition Rating Index (PDRI) tools, the Alignment Thermometer, and the Integrated Project Risk Assessment tool among others. He is recognized for his instruction process in PDRI tools and facilitator training which ensures the successful implementation and continued use of the PDRI tools long after his teaching is completed.

He was recognized for this honor at the 2014 CII Annual Conference in Indianapolis, Indiana.



Innovation in melding microbiology and environmental engineering has earned ASU professor Bruce Rittmann more international recognition.

Rittmann receives inaugural international award for promoting interdisciplinary research

ASU engineer and Regents' Professor **Bruce Rittmann** traveled across the Atlantic recently to be presented the first **ISME/IWA Bio Cluster Award** from the International Water Association and the International Society of Microbial Ecology.

Rittmann was honored Sept. 25, in Lisbon, Portugal at the International Water Association Congress for his outstanding leadership in promoting interdisciplinary research between the microbial ecology and the water and wastewater treatment fields.

Rittmann is an international leader in using microbes found in nature in innovative ways that can benefit the environment or human health. His research team tackles some of the world's leading problems related to water, waste and energy.

Rittmann is also the recipient of the **American Association of Engineering Societies (AAES) 2014 Joan Hodges Queneau Palladium Medal**.

Rittmann is a member of the U.S. National Academy of Engineering, a Distinguished Member of the American Society of Civil Engineers, and a Fellow of the American Association for the Advancement of Sciences, the International Water Association, and the Water Environment Federation.



Reddy awarded 2014 ASME Award

T. Agami Reddy, professor in the School of Sustainable Engineering and the Built Environment, has been awarded the **2014 Yellott Award by the Solar Energy Division of the American Society of Mechanical Engineers (ASME)**. The award was presented during the 8th International Conference on Energy Sustainability, held June 30-July 2 in Boston.

Reddy is a professor in the School of Sustainable Engineering and

the Built Environment, and SRP Professor of Energy and Environment in ASU's Design School, within the Herberger Institute for Design and the Arts. He holds a courtesy appointment in the School of Engineering of Matter, Transport and Energy, and is also a senior sustainability scientist in the Julie Ann Wrigley Global Institute of Sustainability.

According to ASME, Reddy was selected this year for "his dedicated and productive research career in solar thermal energy and energy efficiency in buildings, for his dedication to training students in energy sustainability, and for his extensive service and leadership to the ASME Solar Energy Division."

Hjelmstad honored at Engineers Week

Keith Hjelmstad was named **2014 Engineering Educator of the Year at the Greater Phoenix Area 2014 Engineers Week** awards ceremony.

Hjelmstad is a professor of civil, environmental and sustainable engineering in the School of Sustainable Engineering and the Built Environment.

Hjelmstad led The Mechanics Project, an effort to improve undergraduate mechanics courses based on research that shows people learn best when engaged and curious. The first course he tackled was dynamics.

The new approach involves minimal lectures, only eight per semester, with most work done in a recitation-based format in which small groups of about four students work on problems with peer instructors. Because traditional textbooks didn't work well with this model, Hjelmstad created new materials that provide fundamentals and focus on problem solving. Students learn in multiple ways, including computing projects, formal reports and peer review, and have multiple opportunities to show mastery through assessments, reducing the stress of testing.

The result is that more students are thriving and fewer are failing or withdrawing, with the promise of increased retention of engineering students. Hjelmstad currently is working with colleagues to reform two other mechanics courses, statics and solid mechanics.



Faculty Honors and Awards



Research on water resources earns Mays top awards

Larry Mays, a professor of civil and environmental engineering at ASU, received the **Julian Hinds Award** for his unparalleled research on water resources and hydrosystems.

Mays began his academic career at the University of Texas at Austin for 13 years followed by 25 years at ASU. He has been the author, co-author or editor-in-chief of 23 books. His text and reference books are used around the world.

The Julian Hinds Award, presented by the American Society of Civil Engineers, recognizes notable performance, long years of distinguished service or specific actions that advance engineering in the field of planning, development and management of water resources. It is the highest honor for water resources planning and systems analysis researchers in ASCE. Mays received the award in June, during the EWRI Congress in Portland, Oregon where he delivered the Julian Hinds Lecture.

Mays is a fellow of ASCE, and also a fellow of the International Water Resources Association. He has been a representative to the Universities Council on Water Resources and has served as a member and president of the Council's Board of Directors. Among his other honors, he received a distinguished alumnus award from the Department of Civil Engineering at the University of Illinois.

Mays is also receiving international recognition for his wide-ranging achievements in water resources engineering and surface water hydrology. He was awarded the **Prince Sultun Bin Abdulaziz International Prize for Water-Surface Water Prize** in Riyadh, Saudia Arabia on December 15th, 2014. He then returned on January 2-4, 2015 to present a key note address at their international conference.

The award citation emphasizes his contributions to development of optimization models in hydrology, including real-time optimal dam release during flood conditions and watershed development in urban areas. It notes in particular, "One of his most unique contributions is to demonstrate how ancient water technologies can be applied today to manage water resources in concentrated urban areas and alleviate many present-day sustainability problems."

The achievements that earned him the award include authoring three leading textbooks in his field – "Ancient Water Technologies" (2010), "Ground and Surface Water Hydrology" (2012), and "Integrated Urban Water Management: Arid and Semi-Arid Regions" (2008).

Vivoni's work in hydrology earns engineering research prize

Arizona State University associate professor **Enrique Vivoni** has been named a recipient of the **2014 Walter L. Huber Civil Engineering Research Prize** by the American Society of Civil Engineers (ASCE). The honor recognizes notable achievements in research related to civil engineering, and is generally given to ASCE members under age 40.

The ASCE cited Vivoni for his “contributions to the understanding of ecohydrologic processes in semi-arid areas, including the moderating role of vegetation and interactions among water, energy and carbon cycling, and to the development of high-resolution hydrologic models, including the use of parallel computing systems.”

The selection committee noted in particular his focus on the impacts of climate change on ecosystems in arid and semi-arid regions.

Vivoni is on the faculty of the School of Sustainable Engineering and the Built Environment, and ASU's School of Earth and Space Exploration. He is internationally recognized in the fields of distributed hydrologic modeling, ecohydrology of semi-arid regions, North American monsoon studies and integration of engineering tools for advancing hydrologic science.

In his research contributions to civil and environmental engineering in the hydrology and water resources specialization, Vivoni has distinguished himself in integrating scientific and engineering tools for understanding and forecasting watershed processes and their spatiotemporal distributions.

He has made some significant advances in the past year, demonstrating the role of terrestrial plants on topographic, radiation and hydrological properties in aspect-delimited ecosystems, developing participatory modeling workshops in Mexico that address infrastructure and climate change impacts on water supply in rural settings, and identifying the role of urban irrigation on soil moisture dynamics and its management implications in Phoenix.

Instituted in 1949, the Walter L. Huber Civil Engineering Research Prize has been awarded to five individuals per year since 1958.



Image courtesy ASU Magazine

Faculty and Student Honors



Faculty, student win awards at Construction Industry Institute annual conference

Faculty members **Edd Gibson** and **Mounir El Asmar** and student **David Ramsey**, all with the School of Sustainable Engineering and the Built Environment, won awards for **Outstanding CII Instructor**, **CII Distinguished Professor** and **First Place Poster**, respectively, at the Construction Industry Institute annual conference held July 21 – 23 in Indianapolis, Indiana. The conference has a world-class reputation and is one of the showcase events of the industry.



As previously noted, Edd Gibson received the 2014 Outstanding Instructor Award. It was his second award in this area, the first in 1998.

El Asmar is an assistant professor in the Del E. Webb School of Construction within the School of Sustainable Engineering and the Built Environment. He is the co-director of Sustainable Construction with the EPA National Center of Excellence on SMART Innovations, and also is a senior sustainability scientist with ASU's Global Institute of Sustainability.

Ramsey, a doctoral student in Civil, Environmental and Sustainable Engineering, presented the poster "Quantitative Performance Assessment of Single-Step and Two-Step Design-Build Procurement". He works under the direction of El Asmar.

Starting from top:
David Ramsey
Edd Gibson
Mounir El Asmar

NSF Engineering Research Center Proposals

The National Science Foundation's (NSF) Engineering Research Centers (ERC) are interdisciplinary, multi-institutional centers that join academia, industry, and government in partnership to produce transformational engineered systems along with engineering graduates who are adept at innovation and primed for leadership in the global economy.

The final nine national NSF Engineering Research Center proposals were chosen for site visits during fall 2014. Out of the nine, ASU (and SSEBE) is still involved with two with final presentation given in Washington, DC during January 2015. Three centers will be chosen for funding. A site visit is the last step prior to decisions being made.

Ed Kavazanjian's proposal entitled "**NSFERC for Bio-Mediated and Bio-Inspired Geotechnics**" was chosen for an NSF site visit on October 21-22; ASU is the lead institution and the site visit occurred in the new CAVC facility.

Paul Westerhoff is leading ASU's significant subcontract effort, with Rice University as the lead institution, on the proposal entitled "**NSF Nanosystems ERC for Off-Grid Nanotechnology Enabled Water Treatment**"; his site visit occurred on October 23-24 in Houston.

Congratulations to Ed, Paul and all the faculty and staff members who have worked so hard on these efforts.



left: Ed
Kavazanjian
right: Paul
Westerhoff





Dr. Kristen Parrish works with a local Girl Scout troop on decorating their cookie delivery wagon.

The troops typically choose a theme for their wagon and complete the decorating within the first two hours of the event. After a short lunch break (just enough time for the paint to dry), the girls re-convene to build their wagons. Once the troops finish building their wagons, they begin to work on their cheer or presentation for the judging. Then it's time for the parade where each troop presents its wagon to the panel of judges (generally made up of volunteers from local construction firms and ASU leadership).

In 2014, the girls were visited by a few special guests. SSEBE faculty member **Kristen Parrish**, dressed as a Samoa cookie, was joined by SSEBE school director **Edd Gibson**, Ira A. Fulton Schools of Engineering (IAFSE) dean and SSEBE faculty member **Paul Johnson**, and IAFSE associate dean, **Jim Collofello**. The Girl Scout troops and ASU volunteers really enjoyed the event and most Girl Scout troops left already thinking of their wagon building plans for the next year!

SSEBE Students, Faculty, and Staff Participate in Second Annual Wagon Building Event

Each year in January, the **Advancing Women in Construction Student Chapter** hosts a wagon building event for local fourth and fifth grade Girl Scout troops. In 2014, the chapter hosted this event for 15 troops on Saturday, January 18th. The event offers the Girl Scouts an opportunity to build a wagon that can be used for cookie delivery. Moreover, the wagon building event is a competition, with awards for the best decoration, the best presentation of a wagon, and the best teamwork.

The half-day event kicks off with ASU students, faculty, and staff selecting a troop to work with (2 ASU volunteers per troop). The volunteers lead the girl scouts in a planning session, helping the girls to think about how they want to decorate their wagon, as well as how to build it. After a short planning session, the fun begins! The girls are able to "check out" paint, stickers, and glitter (LOTS of glitter!) to decorate their wagon.



SSEBE faculty Kristen Parrish dressed as a Samoa cookie with SSEBE Director Edd Gibson, IAFSE Dean Paul Johnson and IAFSE Associate Dean Jim Collofello.

Student Honors

Students compete in the Associated Schools of Construction (ASC) competition



This year ASU's Electrical team placed 2nd and received a \$500 cash prize as well as a few offers for internship positions and permanent employment opportunities with various companies.

This past October, students traveled to Chicago, IL to compete in the **Associated Schools of Construction (ASC) Region 3 student competition**. As a member of ASC, ASU sends student teams to compete every year in the Region 6 student competition located in Reno NV, and this year, in an effort to put our teams to the test, we took our show on the road to compete in the open problem categories of Electrical and Healthcare against schools in the Midwest.

The competition is based on real-world projects built by construction professionals from the companies that sponsor the event. Six-person student teams are given 16 hours to develop an estimate, schedule, work plan and various other deliverables and then present their proposals to a panel of industry experts. The competition provides a simulation of the real-world problems faced by construction professionals on a daily basis. Students get the opportunity to use all the skills they have learned in the classroom in a competitive, real-life simulation of the types of things they will be doing after they graduate.

ASU's Electrical team was tasked with preparing a proposal for the electrical components of a high-profile recreational facility located in the heart of Chicago. The facility spanned approximately 20 acres and required the installation of power supply integration, construction of a new electrical room, installation of hundreds of fixtures, a rock-climbing wall and subgrade-level installation in a difficult to reach site all while maintaining the safety and protection of the public. **The ASU team walked away with 2nd place in the competition.**

Company sponsors have the opportunity to get a sneak peak at the future talent entering the workforce one day soon. Students also had the opportunity to participate in a career fair that featured more than 20 companies.

Scholarship, fellowship will propel engineering student's water research

Doctoral student **David Hanigan** will be continuing promising research on water treatment and safety with support from two leading organizations of water experts.

Hanigan has been awarded the international **Water Environment Federation's Canham Graduate Studies Scholarship** and the **American Water Works Association's 2014 Abel Wolman Fellowship Award**.

His research is the focus of efforts to complete the doctoral degree program in environmental engineering in the School of Sustainable Engineering and the Built Environment. Hanigan's academic and research advisor is professor **Paul Westerhoff**. He has been working with Westerhoff and colleagues on projects aimed at protecting human health from the impacts of potentially harmful chemical substances that are finding their way into drinking water.

Developing more effective treatment methods to remove substances from water supplies that pose health risks is only one goal. "We also want to find ways to prevent these things from getting into water supplies in the first place," Hanigan said.

Some of the substances are carcinogens-substances that can cause cancer. Others are carcinogen precursors-substances



Engineering doctoral student David Hanigan is researching water treatment and safety.

from which carcinogens can emerge during application of disinfecting chemicals at centralized water treatment plants. A problem arising more recently involves substances in pharmaceuticals and personal care products, which wastewater plants are not able to fully remove. The potential effects of many of the substances remain largely unknown. One adverse affect includes the reaction of these substances with chemical disinfectants to form carcinogens.

The scholarship award will provide \$25,000 to support Hanigan's research in this area. The fellowship award will provide \$30,000 per year for two years.

As the world's population grows, providing safer water will become increasingly critical, Hanigan said. And he hopes to "contribute significantly" to finding solutions to the challenge.

Engineering doctoral student's water research earns EPA support

After earning a bachelor's degree in civil engineering at the University of Arizona, **Mac Gifford** worked for almost five years as a water resources project designer with a successful engineering services company based in Phoenix. But he yearned to do more.

"I wanted a deeper understanding of new developments in engineering technologies and more direct exposure to advances that are opening up new possibilities. That's not something you will always get in a business," Gifford said. "And I want to become a strong leader and decision maker in my field."

To attain that goal he came to Arizona State University to pursue a doctoral degree in the School of Sustainable Engineering and the Built Environment. Since beginning doctoral studies, Gifford has won a scholarship from the national **Achievement Rewards for College Students** organization, which supports top students who are contributing to innovations in technology and related areas.

He also received the **Dr. Ron E. Thomas and Sharon Thomas Graduate Fellowship** funded by an ASU alumnus and a former ASU employee to aid students returning to school to earn graduate degrees in engineering.

Gifford was selected as a **Fulton Schools of Engineering Dean's Fellowship** and made the **Dean's List with Distinction** for academic achievement in six semesters. He is a student representative on a committee of the AZ Water Association, a leading group of Arizona water experts.

His promising performance has now earned him a **U.S. Environmental Protection Agency STAR (Science to Achieve Results) program fellowship** that supports environmental engineering and science to serve national interests. The award provides about \$42,000 for up to three years to fund graduate-level studies and research.

Gifford is building on his experience in hydraulics and water systems infrastructure design to solve challenges of providing safe drinking water to small and remote communities.



Doctoral student Mac Gifford is conducting water research, exploring the possibilities of various materials that, when applied at the nanoscale, are capable of removing contaminants.

Student Honors

Graduate student earns NSF Research Fellowship



Doctoral student
Daniel Eisenberg

Daniel Eisenberg's aspirations focus on nothing less than helping the world become more resilient.

It's the eclectic nature of his interests that led Eisenberg to the School of Sustainable Engineering and the Built Environment. He's pursuing a doctoral degree with a concentration in sustainable engineering – exploring applications of that branch of engineering to technology development, energy systems and infrastructure, environmental protection, the emerging area of industrial ecology, and even social stability.

Within his first year of doctoral studies Eisenberg was awarded a highly sought after **National Science Foundation (NSF) Graduate Research Fellowship** that will provide \$32,000 per year for three years toward earning his degree.

In addition, he was awarded an **NSF East Asia and Pacific Summer Institutes for U.S. Graduate**

Students Fellowship that enabled him to spend the summer at Hongik University in Seoul, South Korea, working with a leading resilience scientist and environmental engineer, professor Jeryang Park.

At ASU, Eisenberg has been analyzing the impacts new energy technologies could have on the electric power infrastructure systems, working under the guidance of **Thomas Seager**, an associate professor in the School of Sustainable Engineering and the Built Environment.

Eisenberg has been integrating sustainability and resilience objectives into collaborative projects with faculty members and fellow students that encompass diverse pursuits in social and ecological studies, technology development and public policy.

He is also working with the ASU-based NSF Quantum Energy and Sustainable Solar Technologies Engineering Research Center (QESST), and is a member of the Integrative Graduate Education and Research Traineeship: Solar Utilization Network (IGERT-SUN) program to produce citizen-scientists equipped to overcome the technical and social challenges to establishing global energy systems that harness solar energy.

Student organizations win awards

The **Arizona State University ASCE Student Chapter** was selected by the Committee on Student Members to receive a **Certificate of Commendation** for its outstanding activities as recorded in the 2013 Chapter annual report. This is a distinction earned by only the top 15% of all Student Organizations.

Their faculty advisor is **Dr. Kamil Kaloush**.

At the **ASU Student Organization Awards and Recognition Event**, **Engineers Without Borders** won the **Best Fundraiser Award** for the Kenya Dig It fundraiser (a \$200 award). **Dr. Amy Landis** and **Dr. Kristen Parrish** are the co-advisors for the group.

Jonathan Klane and Fred Doerstling from the Fulton Safety Office awarded "ESO Most Committed to Members Health" to the **Concrete Canoe team** for their silica concerns, controls, and other steps taken. In addition, they awarded an **"Honorable Mention: Steel Bridge,"** for their willingness to meet and listen to the Safety Officer's ideas for trying to get them space improvements.



Concrete Canoe team



Student awards

Natalia Hoogesteijn was awarded the National Water Research Institute (NWRI) Fellowship. The fellowship carries with it an award of \$5,000 per year, limited to two years.

Heather Stancl was awarded the WaterReuse Arizona Scholarship (\$2,500).



Leo Schlinger (above), a junior in the Del E. Webb School of Construction heavy civil program, received the Lamberson Memorial Scholarship (\$20,000) to honor long-time Beavers Charitable Trust member and Trustee John Lamberson.

ASU engineering students shine at construction industry conference

Arizona State University engineering doctoral students **Maureen Cassin** and **Tober Francom** earned honors at a recent international construction and engineering conference.

Cassin took **first-place awards in two student competition categories** at the **2014 No-Dig Show** in Orlando, Fla., presented by the **North American Society for Trenchless Technology (NASTT)**. **Francom** was awarded **two of the organization's top scholarships**.

Trenchless technology involves both the methods and tools for an innovative approach to underground infrastructure design and construction that requires minimal excavation and disruption to surface ground.

It's an emerging "green alternative" engineering method for construction of public utility systems such as water, sanitation, energy, electrical, fiber optic cable and transportation systems, as well as for oil and natural gas pipelines.

From among members of 14 student chapters of NASTT, **Cassin** won the top awards in competitions for the **best presentation by a student chapter** and the **best poster describing and illustrating a student research project**. Her research focuses on sustainable trenchless technology methods for pipeline construction in China.

Francom was awarded a **\$5,000 Michael E. Argent Memorial Scholarship** and a **\$1,500 Charles P. Lake-Rain for Rent Scholarship**. The Argent Scholarship is awarded based on a student's academic performance and an essay written by the student on his or her interest in trenchless technology. The Lake Scholarship is awarded to help promising students pursue careers in agriculture, irrigation technology, pumps or fluid dynamics. Francom's research focuses on the impacts of alternative project delivery methods for trenchless construction projects.

Cassin won both the Argent and Lake Scholarships in previous years.

Cassin and Francom are pursuing graduate degrees through the civil, environmental and sustainable engineering program in the School of Sustainable Engineering and the Built Environment. Both are concentrating their studies on construction engineering.



Maureen Cassin wins best poster competition.



Tober Francom (center) presented with the Michael E. Argent Memorial Scholarship.



The ASU student contingent was led by Professor Samuel Ariaratnam, chair of the construction engineering program.

Student awards

Tie Shi, a visiting student at ASU, has won first place with a cash award of \$1,000 in the **2014 Rail Applications Section (RAS) Student Research Paper Contest** on analytics and decision making in railway applications. RAS is a section of the Institute for Operations Research and Management Science. Tie Shi is visiting ASU from Southwest Jiaotong University in China. His faculty advisor is Associate Professor **Xuesong Zhou**.



Thomas Volo (*above*), was named **Engineering Student of the Year at the Greater Phoenix Area 2014 Engineers Week** awards ceremony. Volo, who has received a Dean's Fellowship for his doctoral work, is studying the ecohydrology of desert cities. Specifically, his research uses numerical modeling and eddy covariance techniques to investigate the impacts of landscape irrigation on urban surface energy and soil moisture fluxes.

Outstanding Graduates

Each spring and fall semester special recognition is bestowed upon high-achieving and exemplary students graduating from Arizona State University's Ira A. Fulton Schools of Engineering.

Faculty members select one undergraduate student from each engineering degree program as the program's Outstanding Graduate. In addition, one undergraduate is selected in the spring semester to receive an award as the Arizona State Alumni Association Fulton Schools of Engineering Outstanding Graduate for the academic year.

Students are designated as Outstanding Graduates based primarily on their academic performance, both in classroom studies and in related research experience.

The honor also recognizes the students' contributions to the success of student organizations and support for the Fulton Schools of Engineering educational mission through their service as peer mentors, teaching assistants, and their leadership roles on teams involved in engineering student projects and competitions. SSEBE students **Drew Reasor** (May 2014) and **Elizabeth Barnes** (December 2014) each were selected and gave the student address at the Engineering Convocation.



Drew Reasor



Lindsay Keever



**Shannon
Tweedley**



Jesse Pruitt



Michael Logan

SSEBE Outstanding Graduates

Jesse Pruitt, Del E. Webb School of Construction (Spring 2014)

Drew Reasor, Civil, Environmental and Sustainable Engineering (Spring 2014)

Lindsay Keever, Construction Engineering (Spring 2014)

Michael Gomlicker, Del E. Webb School of Construction (Fall 2014)

Nathan Larson, Civil, Environmental and Sustainable Engineering (Fall 2014)

Bailey Ruff, Construction Engineering (Fall 2014)

SSEBE Leadership And Service Awards

Seth Morales and **Shannon Tweedley**, Del E. Webb School of Construction (Spring 2014)

Gilbert Keams, Del E. Webb School of Construction (Fall 2014)

Alyssa Mittelhauser, Civil, Environmental and Sustainable Engineering (Fall 2014)

SSEBE 4.0 Awards

Jesse Pruitt (Spring 2014)

Drew Reasor (Spring 2014)

Nathan Larson (Fall 2014)

Michael Logan (Fall 2014)

Doctoral Graduates in 2014

Civil, Environmental and Sustainable Engineering

Michelle Barry

Overcoming the Impacts of Extreme Weather and Dissolved Organic Matter on the Treatability of Water Using Ozone
Chair: Dr. Paul Westerhoff

Evan Bingham

Analysis of the State of Practice and Best Practices for Alternative Project Delivery Methods in the Transportation Design and Construction Industry
Chair: Dr. Mounir El Asmar and Dr. G. Edward Gibson, Jr.

Roberta Bosfield

Feasibility of an Open Source Repository for Increasing the Usage of Best Practices in the Architecture-Engineering-Construction Industry
Chair: Dr. G. Edward Gibson, Jr.

Maureen Cassin

A Comparative Analysis of Horizontal Directional Drilling Construction Methods in Mainland China
Chair: Dr. Samuel T. Ariaratnam

Bridget Cavanagh

Use of Interface Treatment to Reduce Emissions from Residuals in Lower Permeability Zones to Groundwater flowing Through More Permeable Zones
Chair: Dr. Paul C. Johnson

Venu Garikapati

A Tour Level Stop Scheduling Framework and a Vehicle Type Choice Model System for Activity Based Travel Forecasting
Chair: Dr. Ram Pendyala

Srinivasa Srivatsav Kandala

Analysis of Freeway Bottlenecks
Chair: Dr. Soyoung Ahn

Brian Lines

Action Research Approach to Implementation of APDMs within Owner Organizations Strategic Management and Overcoming Resistance to Change in the AEC Industry
Chair: Dr. Kenneth Sullivan

Carolyn Mattick

An Emerging Technology Assessment of Factory-Grown Food
Chair: Dr. Braden Allenby

Sanjay Paul

Demographic Evolution Modeling System for Activity-Based Travel Behavior Analysis and Demand Forecasting
Chair: Dr. Ram Pendyala

Anthony Perrenoud

Exploratory Study of Risk Maturity Impact on Construction Project Outcomes
Chair: Dr. Kenneth Sullivan

Jacelyn Rice

Modeling Occurrence and Assessing Public Perceptions of De Facto Wastewater Reuse across the USA
Chair: Dr. Paul Westerhoff and Dr. Morteza Abbaszadegan

Kirk Vance

Early Age Characterization and Microstructural Features of Sustainable Binder Systems for Concrete
Chair: Dr. Narayanan Neithalath

Sarah Volosin

A Study of University Student Travel Behavior
Chair: Dr. Ram Pendyala

Dae Hyun You

A Network-Sensitive Integrated Travel Model for Simulating Impacts of Real-Time Traveler Information
Chair: Dr. Ram Pendyala

Chen Zhou

The Versatile Roles of Sulfate-Reducing Bacteria for Uranium Bioremediation
Chair: Dr. Bruce Rittmann

2014 Scholarship and Fellowship Awards Recipients

A.G.C. Construction ASU Student Scholarship	Keila Lombardozzi, Taylor Mount, Nicholar Palmer
American Airlines Scholars	Bryce Muzzy
Amy and Kent Geiser Honorary Scholarship	Olivia Brancati
Andrew Hanneman Scholarship	Gian Gonzalez, Christopher Sauer
Arizona Society of Civil Engineers (AzSCE) Scholarship	Amanda Kerr, Miriam Woolley
ASQ Ted Thal American Society for Quality Scholarship	Hannah Housenga
Bechtel Construction Scholarship	Keegan Abele, Aaron Chee
Ben C. Griggs Memorial Scholarship	Isaac Martinez
Blowers Engineering Scholarship	Alexander Arveson
Carl L. and Jean Wolcott Meng Memorial Scholarship	Michael Justice
CFMA Joseph J. Quigley Memorial Scholarship	Naomi Kartz, Daniel Tepovich, Anh Tuyet Truong
Charles and Nancy O'Bannon Scholarship	Miriam Woolley
Charles and Nancy O'Bannon Scholarship for Construction	Cameron Peck
Civil and Environmental Engineering General Scholarship	Rachel Von Gnechten
D. L. Withers Construction Scholarship	Dylan Schweigert
Daniel and Katherine Mardian Scholarship	Oswaldo Robledo
Dave Clifton Memorial and ASPE Chapter 6 Scholarship	Mario Ramirez

Del E. Webb Foundation Finance and Accounting Scholarship	Enrique Collazo, Matthew Taylor
Del E. Webb Foundation Undergraduate Student Scholarship	Chris Coscia
Del E. Webb Foundation Women in Construction Scholarship	Anh Tuyet Truong
Del E. Webb Memorial Scholarship	Deshane Cody, Thomas Fyffe, Leo Schlinger, Vincent Teran
Del E. Webb School of Construction Scholarship	Keegan Abele, Abby Boaz, Richard Carman, Lawrence Chan, Aaron Chee, Enrique Collazo, Luis Garcia Gonzalez, Michael Gomlicker, Gian Gonzalez, Naomi Kartz, Matthew Le Roy, Jeremy Mossi, Christopher Ortega, Cameron Peck, Mario Ramirez, Christopher Sauer, Dylan Schweigert, Logan Spears, Alexa Tate
DeTommaso Endowment (NAMU)	Marlene Tapia
Dr. Sandra L. Weber Memorial Scholarship	Kailee Bow
Edd and Gail Gibson MG Leaders Scholarship	Hayley Monroe
Elyse and Paul Johnson Scholarship	Olivia Brancati, Benjamin Havens
Empire South	Louis Garcia Gonzalez
FNF Construction, Inc. Scholarship	Matthew LeRoy
Frank M. Chandler Memorial Scholarship	Cory Thellmann
FWS Women in STEM	Ema Shqalsi
James Fann Memorial Scholarship	Sabrina Ortiz
Jan Bennett Endowed Scholarship	Brianne Standage

Congratulations to the following students on their achievement and a special thank you to the donors for their contributions. Total scholarships were awarded in the amount of **\$314,689**

Jan Tuma Memorial Scholarship	Mackenzie Hagan
Jason McElroy Memorial Scholarship	Richard Carman
Jerry King Scholarship	Dillon Armstrong
Jim Bebout Scholarship	Dillon Armstrong
John G. Colton Construction Study Fund	Kelsey Maris
John Lamberson Memorial Scholarship	Leo Schlinger
LaVeda Huitt Carpenter Native American Scholarship Initiative	Brandon Hatathlie
Martin H. Rosness Memorial Scholarship	Martha Weber
Marvin Sheldon Memorial Scholarship	Shawn Allison
METSTEP Scholars Program	Karston Lee
Mike Kolling Memorial Scholarship-Civil Engineering	Stuart Thomasson
Mike Kolling Memorial Scholarship-Construction	Gregory Williams
Native American Construction Management Scholarship (CIIC)	Aaron Chee, Deshane Cody, Kevin Jacob, Gilbert Keams, Ramon Littleman, Kristen Tsosie
Nesbitt Contractors Scholarship	Casey Armbrust
Opus West Construction Corporation Undergraduate Scholarship	Oswaldo Robledo
Paragon Structural Design, Inc. Scholarship	Michael Albretsen
PENTA Building Group Scholarship	Dustin Eads, Jacob Kelley, Christopher Ortega, Chase Roberts
R. Glen Schoeffler Scholarship	Logan Spears

Robert H. Johnson Undergraduate Scholarship	Abby Boaz, Michael Gomlicker, Mason Phillips, Cory Thellmann
Robert J. Wheeler Memorial Scholarship	Gilbert Keams, Logan Spears, Matthew Taylor
Ron Pratte Scholarship	Paxton Zweifel
Samuel F. Kitchell Undergraduate Leadership Award	Gilbert Keams, Mason Phillips, Daniel Tepovich
SMECA Scholarship	Wesley Scatena
Southwest Patrons	Luis Garcia Gonzalez, Keila Lombardozi, Jeremy Mossi, Mason Phillips, Brianne Standage
Stanley D. Duke Applied Science Award	Michael Albretsen
Structural Engineers Association of Arizona Scholarships	Michael Albretsen, Michael Justice
Sundt Construction Scholarship	Michael Halas
Terry Bourland Memorial Scholarship	Austin Aguinaga, Aaron Chee, Eric Lao, Robert Richards
The Ames Family Scholarship	Nasrudin Ebrahim
The Beavers Heavy Construction Scholarship	Andrew Ortiz, Sean Osborne
Tom and JoAnn Prescott New American University Scholarship	Adrian Cavada, Kahla Vitz
Valley Paving Association	Kellen Snider
Wood, Patel and Associates, Inc. Scholarship	Sooper Lewis

Faculty News

Western OSHA Education Center at ASU



James Rogers, Director, School of Sustainable Engineering and the Built Environment

The **Del E. Webb School of Construction** is home to ASU's **OSHA Training Institute Education Center**. OTI Education Centers are a National network of nonprofit organizations authorized by OSHA to deliver occupational safety and health training to private and public sector personnel, organizations and agencies.

This center was established through an agreement between ASU and the US Department of Labor to ensure that Arizona has high quality training and education related to worker safety and health.

Jim Rogers, OTI Ed Center Director, recently met with OSHA officials and other Education Center directors in Washington, DC to get the latest updates on training programs, new standards, and other issues related to OSHA enforcement.

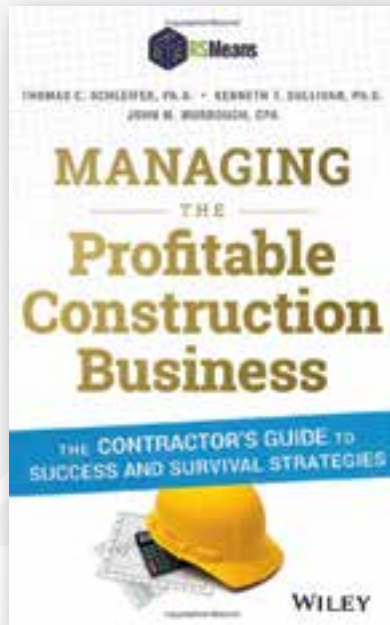
Rogers has been in the concrete industry for over 20 years and is an active American Concrete Institute (ACI) member. He writes a monthly safety column that appears in Concrete Construction Magazine and was featured at World of Concrete in a panel discussion on OSHA's proposed new silica standard and its potential effects on the concrete industry.

Rogers specializes in continuing education and the development of industry outreach courses, and has also served as an adjunct faculty member at ASU's Del E. Webb School of Construction, teaching concrete and general construction management courses. He is an expert in post-tensioned concrete construction, with several published manuals and numerous articles and documents on concrete and post-tensioning, including *Design of Post-Tensioned Barrier Cable Systems*, *Design of Post-Tensioned Sport Courts*, and several chapters of the current *Post-Tensioning Manual*.



Participants of ASU's first OSHA 511 Course

Two engineering faculty collaborate on construction business book



Two faculty members in the School of Sustainable Engineering and the Built Environment have co-authored a book about the risky construction industry.

Two faculty members and a certified public accountant have co-authored a book about maneuvering through the complicated and risky construction industry.

"Managing the Profitable Construction Business: The Contractor's Guide to Success and Survival Strategies," recently published by John Wiley & Sons, shares "secrets" that allow contractors to take control of their contracting business and manage it through the natural highs and lows of the market.

The authors are **Thomas C. Schleifer**, assistant research professor in the Del E. Webb School of Construction, **Kenneth T. Sullivan**, an associate professor of construction both in the School of Sustainable Engineering and the Built Environment, and John M. Murdough, principal of Pittman & Murdough, a CPA who specializes in construction business accounting.

The book addresses understanding the primary areas of construction business failure in the next decade, minimizing business risk with real-world examples and developing a positive and competent management attitude and strategy.

Sullivan specializes in performance measurement, risk management, best value contracting, organizational transformation, and accountability systems. His research processes have generated more than \$6 million in research funding and have been implemented in information technology, business services and construction projects valued at more than \$3 billion. He has an MBA in real estate and urban economics, and a PhD in civil and environmental engineering,

both from the University of Wisconsin, Madison.

Schleifer, a sought-after private consultant, joined the construction industry at 16 and has worked as a foreman, field superintendent, project manager and vice president of a construction company he owned with his brother. He also was the founder and president of the largest international consulting firm serving the contract surety industry, and often is referred to as a construction business "turnaround" expert because of the number of companies he has rescued from financial distress.



Kenneth T. Sullivan



Thomas C. Schleifer

Ultimate learning space

College Avenue Commons

Sept. 3, 2014 marked the grand opening of Arizona State University's newest building **College Avenue Commons (CAVC)**. The five-story, 137,000-square-foot facility in the heart of Tempe will serve as the cutting-edge home for ASU's Del E. Webb School of Construction programs, as well as a center of activity for students, staff, alumni and the community.

Located on the College Avenue corridor that leads to Sun Devil Stadium, College Avenue Commons is a state-of-the-art building equipped with many sustainable design features including chilled-beam cooling, daylighting, and recycled and low-emitting building materials. In addition to dozens of technologically advanced classrooms, meeting areas and offices, the building also boasts the future Sun Devil Welcome Center as well as the Sun Devil Marketplace.

The university is seeking **LEED-Gold certification for the building** in keeping with ASU goals to achieve campus-wide carbon neutrality and zero waste.

Many of the Del E. Webb School of Construction students, current and alumni, participated in the CAVC project.





CAVC

Five-story,
137,000-square-foot
facility in the heart
of Tempe



College Avenue Commons



Collaborative study and meeting spaces were designed to prompt discussion.



Outdoor spaces include balconies with drop-down video screens, a second-floor deck and multiple, ground-level patios.



This year a new Devils on College pre-game event encompassed the plaza area surrounding the recently constructed College Avenue Commons building.

"We will be able to use the building as part of the curriculum, watching the heating and cooling systems at work, monitoring water usage and peering through exposed walls to show students how they were built," said **G. Edward Gibson, Jr.**, professor and director of the School of Sustainable Engineering and the Built Environment. **"It's a unique and exciting piece of construction."**



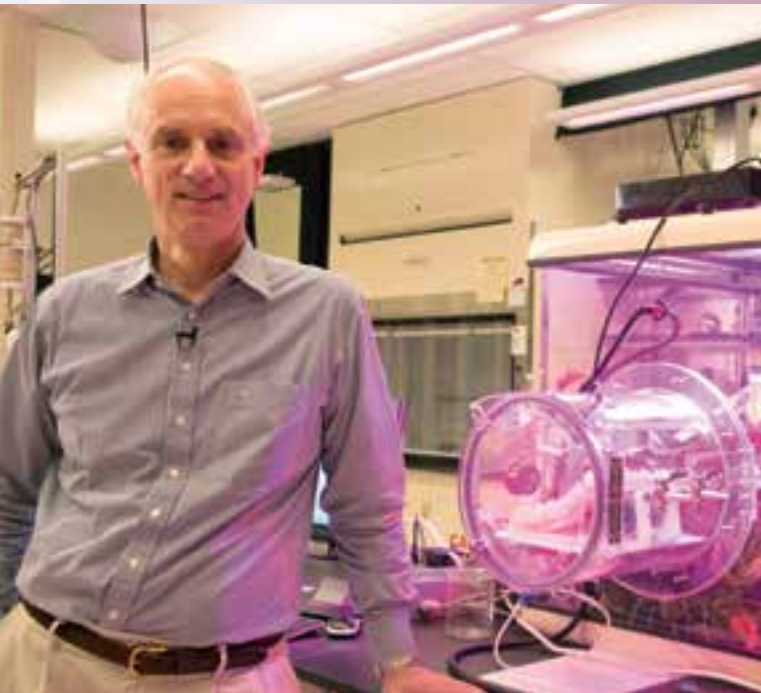
G. Edward Gibson, Jr.

Center for Negative Carbon Emissions

Klaus Lackner, PhD is the **director of the Center for Negative Carbon Emissions (CNCE)** and **professor** in the **School of Sustainable Engineering and the Built Environment**. After many years at Columbia University in New York, Lackner now bases his efforts at Arizona State University where he directs the Center.

Lackner has been focusing on developing technology to pull carbon dioxide out of the air. The use of fossil fuels has contributed to the increase of carbon dioxide – one of the “greenhouse” gasses that trap heat in the atmosphere.

In order to meet the challenge of transitioning to a carbon negative energy economy, CNCE focuses on developing the next generation of carbon management technologies. The Center has recently demonstrated a moisture swing sorbent cycle for capturing carbon dioxide (CO₂) from air. The sorbent, an anionic exchange resin, has been shown to absorb CO₂ when it is dry, and to release it again when exposed to moisture. The Center aims to advance this technology as it applies to closing the carbon cycle with carbon recycling, reducing atmospheric concentration through CO₂ disposal, and the economic and policy considerations from its availability.



Klaus Lackner, *director* of Center for Negative Carbon Emissions and professor in the School of Sustainable Engineering and the Built Environment.



Allen Wright, *executive director* of the Center for Negative Carbon Emissions. Wright's current research focuses on the characterization and improvement of air capture media as well as other related technologies.

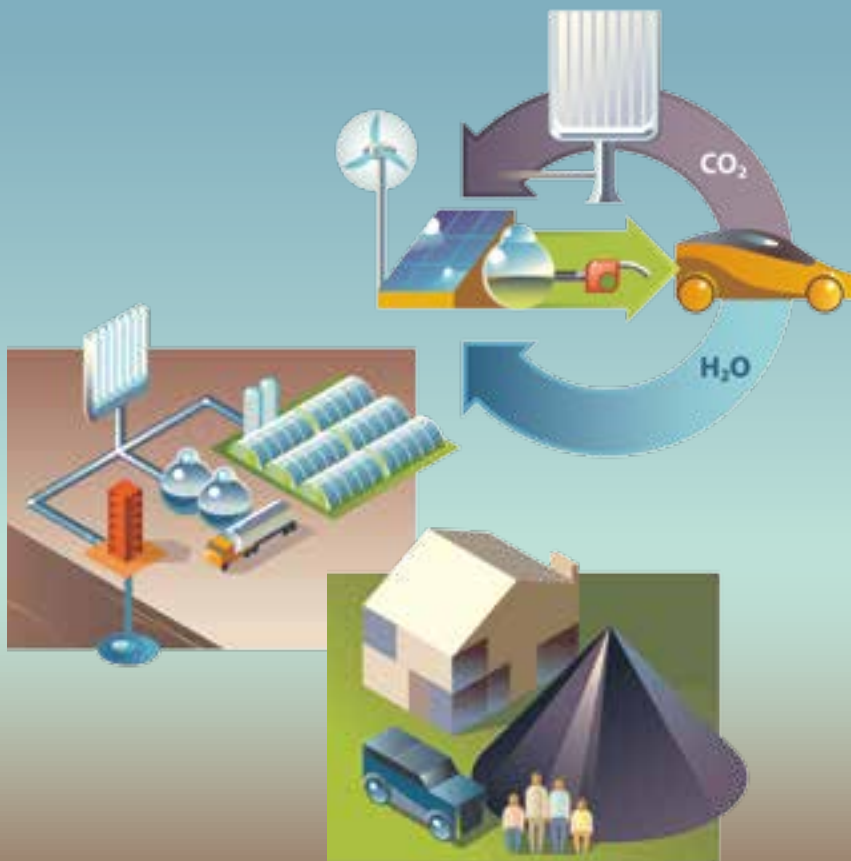


Christophe Jospe, *chief strategist* for the Center for Negative Carbon Emissions.

the center for negative carbon emissions

CNCE Vision

To advance carbon management technologies that can capture carbon dioxide directly from ambient air in an outdoor operating environment.



UGTA's and Flipped Classes in CESE

"It's learning more deeply." The words hang in the air as **Dr. Keith Hjelmstad, Program Chair for the Civil, Environmental and Sustainable Engineering (CESE)**, leans forward in his office chair. He is describing the effects of having an **integrated instruction plan for CEE 210 Statics, 212 Dynamics and 213 Deformable Solids**, traditionally some of introductory classes that challenge the retention of CESE undergraduate students.

His plan started several years ago by **"flipping" content instruction** and utilizing class time and recitation for collaborative learning and team projects. Throw into the mix the Ira A. Fulton Schools of Engineering (IAFSE), **Undergraduate Teaching Assistant (UGTA)** program and you have catalysts for highly transformative undergraduate engineering education. It is the unique combination of flipping courses and peer support with UGTA's that has Hjelmstad so excited. "It really solves the bandwidth problem. I have an UGTA for every ten students and those UGTA's were top performers in the previous classes. They [UGTA] enable a peer relationship and provide greater contact than I could ever hope for."



"We have taken the courses and brought the attrition numbers into the single digits"

Several years ago Dr. James Collofello, Associate Dean in IAFSE, implemented the UGTA program to provide academic instruction exposure to outstanding undergraduates while providing another tool to retain undergraduate engineering students. The IAFSE standard ratio of students to UGTA is 40:1. Hjelmstad sought a more novel approach and convinced Collofello that his proposed 10:1 ratio could be the catalyst to breaking the "sophomore slump," a condition in which students opt out of engineering because the fundamentals courses act as points of alienation rather opportunities for deep community based learning. "We have taken the courses and **brought the attrition numbers into the single digits** among D, E, and W grade students." It is a formula that Hjelmstad hopes to expand to the next tier of upper-division undergraduate courses. "There is a tightly woven process that provides real outcomes that go well beyond the traditional grade provided at the end of each class. We also have a real community of UGTA's that come out of the class with the best possible skills and a real desire to teach."

The challenge going forward for Hjelmstad is maintaining the 10:1 ratio in all of the core classes. The current funding is limited. UGTA's receive stipends from IAFSE for their work in the classes and the impending budget cuts put Hjelmstad's efforts in a challenging situation. The end goal is to secure funding to a level where he can provide UGTA's similar to the mechanics courses to the majority of our undergraduate courses the impact could be significant. Last year funding covered an average of 52 UGTA's each semester. The effort is a long-term steady target to fund a worthy educational goal.

"This is the path forward; we can't continue to teach the same way we did 40 years ago. We have to continue to improve undergraduate education that focuses on real outcomes and an education that is meaningful for the professional workplace."

"This is the path forward; we can't continue to teach the same way we did 40 years ago."



Arizona Center for Algae Technology and Innovation (AzCATI)

The Arizona Center for Algae Technology and Innovation (AzCATI), located at the Polytechnic campus, partners with the rapidly growing algae research community and the emerging industry to propel Arizona into the forefront of innovation in biofuels and bio-product research and development. As part of the disestablishment of College of Technology and Innovation (CTI) last spring, AzCATI was looking for a new home unit.

Given the similarity and collaborations that exist between the on-going biofuels program in SSEBE and work being done at AzCATI, it was decided to create a permanent home for AzCATI within SSEBE in summer 2014. This decision presents the greatest number of opportunities, synergy, and benefits for both AzCATI and SSEBE, including addition of new faculty members, long term research expenditure growth and graduate student programs. It will also lead to increased interactions between faculty and students on the Tempe campus with faculty and students at the Polytechnic campus.

AzCATI serves as a statewide and international intellectual and resource hub for algae-based goods, finds innovative commercial uses for algae, operates as a learning environment for next-generation scientists; facilitates collaboration between higher education, industry, and national entities; and is a national “test bed” for algae technology. It is a world class facility for faculty and students.



Arizona Center for Algae Technology and Innovation (AzCATI)

ASU experts follow gut reaction in autism treatment study

About half of all children and adults with autism suffer from chronic gastrointestinal problems, causing frequent pain, discomfort and irritability. Research out of ASU suggests these gastrointestinal (GI) complications may be due, in part, to abnormal gut bacteria.

A new study approved by the U.S. Food and Drug Administration and led by ASU is examining a novel treatment – called fecal microbiota transplant (FMT) – for GI problems in children with autism. The treatment involves transferring about 1,000 different species of live gut bacteria from a healthy donor that then act like a broad-spectrum probiotic treatment to restore normal gut bacteria.

The FDA has approved a pilot treatment study of 20 children with autism, ages 7 to 17 years, and moderate to severe gastrointestinal problems.

Led by professor **Rosa Krajmalnik-Brown** in the School of Sustainable Engineering and the Built Environment and professor James Adams, director of the ASU Autism/Asperger's Research Program, the ASU research team published a scientific paper last year demonstrating that children with autism were missing several hundred species of gut bacteria compared to typical children.

"Our initial work found major differences in the gut bacteria of children with autism compared to typical children, and our subsequent work has confirmed those findings," said Krajmalnik-Brown. "Children with autism seem to be missing hundreds of beneficial gut bacteria."

"Many children and adults with autism have chronic gut problems, sometimes lasting for many years and seriously affecting their quality of life," said Adams. "We think this treatment may be helpful."

The team's hypothesis is the FMT will "reseed" the gut with beneficial bacteria that will help diminish GI problems and possibly reduce autistic symptoms. Krajmalnik-Brown said she has high hopes for the study and the results it yields.

"I have a big passion for working with kids with autism," she said. "One of the reasons I got into environmental engineering is because I wanted to help people."



Professor Rosa Krajmalnik-Brown in the School of Sustainable Engineering and the Built Environment



Building the framework for the future of biofuels

Biofuels – fuels made from plants – are seen by many as one of the better options for brightening the national energy outlook.

They offer a promising renewable resource as a replacement for nonrenewable fossil fuels, and a way to reduce the amount of greenhouse gas emissions being pumped into the atmosphere as a result of our use of conventional petroleum-derived fuels.

They could help the United States take major steps to reduce the country's dependence on oil from other parts of the world.

For more than five years **Amy Landis** has led research that is revealing the potential rewards of developing large-scale biofuels production, as well as the potential drawbacks we would face in the effort.

"We are documenting that there would be environmental benefits, but also trade-offs in growing biofuels that would have to be dealt with," said Landis, an associate professor in the School of Sustainable Engineering and the Built Environment.

Two National Science Foundation (NSF) grants combined to provide about \$650,000 for projects directed by Landis, enabling her to paint a clearer picture of the impacts of developing a major biofuels industry. Both grants were through the NSF's Chemical, Bioengineering, Environmental and Transport Systems Division.

One project looked at the feasibility of growing bioenergy crops on marginal lands where soil nutrients first have to be restored to enable agricultural use. A second project involved forecasting the environmental impacts of next-generation biofuels.

According to Landis, lands damaged by industrial waste or other pollutants could be restored sufficiently to support agriculture for growing bioenergy crops.

Landis' team was able to use other forms of nonhazardous industrial waste materials to neutralize the acidity of soil at polluted sites-particularly abandoned mining lands. The method restored fertility to a level that allowed many of the plants, from which biofuels are derived, to grow. As a result, biofuels agriculture could become a significant contributor to soil remediation, land reclamation and natural storm water management that fertile, absorbent ground can provide.

Amy Landis (center) has led research to study the feasibility of restoring soils degraded by industrial wastes and other pollutants for growing bioenergy crops. In broader research, she has examined the potential environmental benefits and drawbacks of expanding biofuel production.



Fish tale: new study evaluates antibiotic content in farm-raised fish

Antibiotics – one of modernity's great success stories – are charms that come with a curse. Their overuse in human and animal populations can lead to the development of resistant microbial strains, posing a dire threat to global health.

In a study, **Hansa Done, PhD candidate**, and **Professor Rolf Halden**, professor in the School of Sustainable Engineering and the Built Environment examined antibiotic use in the rapidly expanding world of global aquaculture.

Done and Halden measured the presence of antibiotics in shrimp, salmon, catfish, trout, tilapia and wai, originating from 11 countries. Data showed traces of 5 of the 47 antibiotics evaluated.

The menace of germs bearing resistance to our best medical defenses is reaching crisis proportions. Each year, resistant microbes sicken some 2 million people in the U.S. alone and kill about 23,000 according to the Infectious Diseases Society of America.

On September 18, President Obama proposed the first governmental steps to address the problem, establishing a task force to be co-chaired by the secretaries of Health and Human Services, the Department of Defense, and the Department of Agriculture.

The new initiative to reign in antibiotic overuse has been welcomed in the medical community, though many believe that much more needs to be done to safeguard society. The chief complaint is that the proposed measures largely ignore the largest consumers of antibiotics-animals farmed for human consumption, including fish.

"The threat of living in a post-antibiotic era cannot be avoided without revising current practices in the use of antibiotics in animal husbandry, including in aquaculture." Says Halden.

Halden, who directs the Biodesign Institute's Center for Environmental Security, is a leading authority on the human and environmental impact of chemicals (particularly their fate once their useful life has ended). In previous research, he has explored the intricate pathways from production to postconsumption fate of antimicrobials and the risks posed.

The new study examines the persistence of antibiotics in seafood raised by modern aquaculture. The research area is largely unexplored, as the primary focus of studies of antibiotics has been on drugs used in human medicine. The current research is the first to evaluate previously unmonitored antibiotics; it represents the largest reconnaissance conducted to date on antibiotics present in seafood.



Rolf Halden, professor in the School of Sustainable Engineering and the Built Environment



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Alumni Achievement

Briston Construction - Construction Scholarship for Veterans

Daniel Briscoe, President (2007) and Brandon Carr, COO (2001) inked a commitment in December to provide the first scholarship focused on military veterans while pursuing a construction management degree. Briscoe and Carr, both veterans and alumni of the Del E. Webb School of Construction, are passionate about providing opportunities for veterans that are re-entering the workforce. Briston Construction, a Service-Disabled-Veteran-Owned-Small Business, currently provides internships and full time positions and has hired DEWSC students since they started the company in 2009. "We are excited to offer the scholarship," proclaimed Briscoe. "It is a great way to give back and to interact with other veterans coming into the CM program."



Andres Sotil Chavez, PhD has been named Chair of the Civil Engineering Department at Universidad San Ignacio de Loyola a private university located in Lima, Peru. Andres received his PhD in Civil, Environmental and Sustainable Engineering from Arizona State University in fall 2005 and his MS in 2003.

Chad Fischer, who earned a Bachelor's degree in Civil Engineering from Arizona State University in fall 2013, has been hired by KLJ, an engineering surveying and planning firm, in their Great Falls office. Since 1938, KLJ has provided multidisciplinary engineering-based solutions for national, large-scale operations, with the local expertise to drive projects forward and deliver successful results.



Morteza Abbaszadegan, PhD

Professor
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Research Expertise: Contemporary water quality issues related to health-related water microbiology including microbial detection methodologies, pathogens inactivation and removal mechanisms during water treatment processes, water quality in water distribution systems and microbial monitoring of source waters. Abbaszadegan is a professor of environmental microbiology/engineering and founding director of the National Science Foundation (NSF) Water & Environmental Technology (WET) Center at Arizona State University.

Honors and Distinctions: Authored more than 100 research manuscripts, book chapters and reports in the area of environmental microbiology and engineering; Editor of the Journal of Water and Health; successfully established NSF Centers in Water Quality and Environmental Technology at ASU; served on several national and international committees and currently is the Chair, Section 9510, Detection of Enteric Viruses for Standard Methods. Abbaszadegan received the Outstanding Research Team Award, University of Arizona.



Braden Allenby, PhD, JD

President's Professor
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Research Expertise: Sustainable engineering, Design for Environment, industrial ecology, engineering and applied ethics, transhumanism and emerging technologies, and earth systems engineering and management

Honors and Distinctions: Allenby is the Lincoln Professor of Engineering and Ethics, and of Law, 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 Batten Fellow at Darden Business School at the University of Virginia, and a Fellow of the Royal Society for the Arts, Manufactures & Commerce.

Allenby is also the founding chair of the Consortium for Emerging Technologies, Military Operations, and National Security; founding director of the Center for Earth Systems Engineering and Management.



Samuel Ariaratnam, PhD, PE, PEng

Professor and Construction Engineering Program Chair
PhD, University of Illinois at Urbana-Champaign
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Research Expertise: Sustainable urban underground infrastructure systems with an emphasis on horizontal directional drilling and trenchless pipe replacement

Honors and Distinctions: Ariaratnam has published over 250 technical papers, holds three patents, co-authored five textbooks, and is active in numerous professional organizations. Received the Young Civil Engineer Achievement Award from the University

of Illinois at Urbana-Champaign (2003); past recipient of the John O. Bickel Award from the American Society of Civil Engineers and was named to the Phoenix Business Journal's prestigious "Top Forty under 40" list in 2006. Currently, serves as the Chairman of the International Society for Trenchless Technology. Ariaratnam was named the "2012 Trenchless Technology Person-of-the-Year" by Trenchless Technology Magazine. Ariaratnam is a registered professional engineer in the State of Arizona and the Province of Ontario (Canada).



Steven K. Ayer, PhD

Assistant Professor
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Research Expertise: Emerging and mobile computing technologies in design and construction, mixed and augmented reality visualization, building information modeling (BIM), and engineering education.

His research focuses on leveraging existing and emerging computing technologies to assist the building industry and also help in educating students who intend to pursue careers in these fields.

His research explores new technological capabilities as well as how these new technologies influence human behavior in design and construction contexts. Up to date information about his research can be found at www.etbimlab.com.

Honors and Distinctions: Ayer joined the School of Sustainable Engineering and the Built Environment at ASU in 2014. Prior to joining ASU, he completed his MAE and PhD degrees as well as his postdoctoral research at The Pennsylvania State University in the Architectural Engineering Department. At Penn State, Ayer worked in the Computer Integrated Construction research group exploring how computers can enhance construction processes.



Allan Chasey, PhD, PE

Associate Professor and Program Chair DEWSC
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Research Expertise: Construction process for high-technology, controlled environment facilities, sustainable construction

Chasey is an associate professor and the Program Chair for the Del E. Webb School of Construction. He 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 ASU. He is also the Sundt Professor of Alternate Delivery and Sustainable Development.

Honors and Distinctions: Chasey is a registered Professional Civil Engineer in Arizona, an OSHA Construction Outreach Trainer, and a LEED AP.

He serves on the Board of Advisors for Fiatech and the Board of Directors for the Healthcare Institute. He is a member of the American Society of Civil Engineers (ASCE), the Association for the Advancement of Cost Engineering (AACE), and the International Society of Pharmaceutical Engineers (ISPE) and the American Society of Healthcare Engineering.



Mikhail Chester, PhD

Assistant Professor
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Research Expertise: Energy and environmental assessment of large infrastructure systems, transportation systems and cities, evaluating life-cycle and supply chain effects and their associated human and environmental impacts

Chester has an affiliate appointment with the School of Sustainability. Chester's research expands the assessment boundaries of complex systems to understand comprehensive effects of policies and

decisions, including infrastructure interdependencies. He is interested in determining the external control and damage costs of these impacts and how internalization of these costs may inform behavioral economics for sustainable policies and decisions. Chester's transportation life-cycle assessment research project website with up-to-date results and in-depth methodological documentation is available at www.sustainabletransportation.com.

Honors and Distinctions: Chester's *Environmental Assessment of Passenger Transportation Should Include Infrastructure and Supply Chains* publication was recently selected as one of the journals top 3 manuscripts for 2009.



Oswald W. Chong, PhD, Peng, LEED A.P.

Associate Professor
PhD, University of Texas at Austin
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Research Expertise: Energy modeling and degradation, information technology and systems, energy, project management systems, heavy infrastructure systems

Chong joined the School of Sustainable Engineering and the Built Environment in 2014. He founded the International Conference on Sustainable Design, Engineering and Construction (its third conference in 2014 and attended by over 300 participants), the Institute of Sustainable

Engineering Knowledge, and the Elsevier Journal of Knowledge and Information Modeling for Sustainable Science, Design and Engineering. Chong's research focuses on the clustering, modeling and disseminating of sustainable engineering knowledge, and understanding and modeling the degradation and recovery processes of materials, products, buildings, infrastructure, and systems. He also works extensively on project management systems for infrastructure (particularly tunneling and underground construction).

Honors and Distinctions: Chong advises the government agencies in several countries on issues pertaining to carbon emissions, energy efficiency, sustainability, information technology and productivity.



Mounir El Asmar, PhD

Assistant Professor
Senior Sustainability Scientist, Global Institute of Sustainability
Co-director, EPA National Center of Excellence on SMART Innovations
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Research Expertise: Innovative project delivery systems, specifically design-build (DB), integrated project delivery (IPD), and public-private-partnerships (PPP); sustainable performance analyses; decision-making in the built environment; cost engineering.

El Asmar's research activities focus on improving the performance of the built environment through the use of mathematical and statistical modeling of facility and project performance, as well as developing processes to advance decision-making in the built environment. He is currently leading studies to improve mechanical contractors' market-entry decisions, analyze public-private-partnerships (PPP) funding streams, and benchmark PPP performance in the U.S. transportation sector. El Asmar is teaching classes on alternative project delivery methods, strength of materials, construction research methods, and sustainable construction at ASU.

Honors and Distinctions: Construction Industry Institute (CII) Distinguished Professor Award; American Society of Civil Engineers (ASCE) Excellence in Civil Engineering Education (ExCEED) Teaching Fellowship; ASCE Best Paper Award for the Journal of Construction Engineering and Management.



James Ernzen, PhD, PE

Associate Professor
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Research Expertise: Concrete materials, production and construction operations; integrated project delivery methods

Ernzen serves as the Academic Co-chairperson of the Project Delivery Methods Task Force in the Alliance for Construction Excellence where he teaches and performs research in integrated project delivery methods. He coordinates the concrete construction emphasis area in DEWSC.

Honors and Distinctions: Participated on an FHWA-AASHTO sponsored International Scanning Tour (2001) to investigate innovative contracting methods in Europe; designated as one of 75 charter Fellows of the Design Build Institute of America (2002); "Distinguished Service Award" by American Institute of Steel Constructors, and the "Lifetime Achievement Award" from the Arizona Chapter of the American Concrete Institute. Director of the Del E. Webb School (2005-2009).



Apostolos Fafitis, PhD, PE

Associate Professor
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Research Expertise: Constitutive modeling of brittle materials, elastoplastic behavior of structures, time dependent nonlinear structural analysis and seismic isolation of structures

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 the USA. He has been

involved in the analysis and design of reinforced and pre-stressed concrete bridges and buildings. Fafitis' teaching interests include: statics and strength of materials, reinforced and pre-stressed concrete design, nonlinear structural analysis and dynamics of structures.

Honors and Distinctions: Fafitis is a member of several committees including American Society of Civil Engineers (Fellow), American Academy of Mechanics, ASCE Computational Mechanics Committee and AzSCE Bridge Technical Committee. He is a registered professional engineer in the European Union, S. Africa and Arizona.



Peter Fox, PhD, PE

Professor and Graduate Chair
PhD, University of Illinois
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Research Expertise: Water reuse, biological treatment processes and brine disposal/desalination

Professional interests are primarily in water reuse, biological treatment processes and brine disposal/desalination. Fox has focused his most recent work on physical water treatment systems and sustainable technologies.

Honors and Distinctions: 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; authored the groundwater recharge chapter in the Metcalf and Eddy textbook on water reuse; Executive committee member for the development of the national roadmap for desalination and water purification; Quentin Mees Research Award from the AzWater Association (1991, 1994, 1997 and 2003); Nathan Burbank Environmental Educator Award (2013).



Matthew Fraser, PhD

Professor
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Research Expertise: Urban air quality, sources and control of air pollution, sustainability analysis of energy systems

Fraser is the Executive Director of the Quantum Energy and Sustainable Solar Technologies Engineering Research Center (QESST ERC), as well as a Professor in SSEBE and the School of Sustainability at ASU. The QESST ERC is an interdisciplinary team consisting of multiple universities, world renowned companies, and leading photovoltaic (PV) entrepreneurs focused on building a strategic partnership to generate innovative solutions to sustainable electricity generation. As a faculty member, Fraser directs his own research projects on urban air quality. His research focuses on using organic speciation and receptor modeling to apportion ambient pollutants to their original source.

Honors and Distinctions: Presenter "University/City Partnerships in Promoting Urban Sustainability" at the White House Office of Science and Technology Policy Workshop on Energy Efficiency, (2011). Panelist at the American Association for the Advancement of Science and Brookings Institute Forum on "Eco-Engineering: Building Sustainable Cities", (2011).



G. Edward (Edd) Gibson, Jr., PhD, PE, NAC

Professor and Director of the School
Sunstate Chair of Construction Management and Engineering
PhD, Auburn University
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Research Expertise: Front end planning, alternative project delivery methods, risk management, dispute resolution

Edd Gibson joined ASU and the Del E. Webb School of Construction in August 2009 as its programs chair. In 2011 he was named director of the School of Sustainable Engineering and the Built Environment. Gibson has led over \$9 million in funded research during his career from sponsors such

as NSF, Construction Industry Institute, NRC, and Alfred P. Sloan Foundation. He has taught on the university level for over 25 years and has delivered more than 190 short courses to industry, receiving awards for university and continuing education instruction. Gibson has several years of industry employment experience and is a licensed professional engineer in Texas.

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; Construction Industry Institute's Outstanding Instructor Award, 2014; National Society of Professional Engineers; Sustaining Universities Program; Outstanding Engineering Educator Award, 2002.



David Grau, PhD

Assistant Professor
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Research Expertise: Sustainable design and construction operations, uncertainty analysis and risk management, worker health and safety, lean theory and implementation, and engineering education

Grau graduated with both an MS and a PhD in Civil, Architectural, and Environmental Engineering from The University of Texas at Austin, and with an Industrial Engineering degree from the Universitat Politècnica de Catalunya. Previous to his affiliation with ASU, he taught at The University of

Alabama as an Assistant Professor for four years. Currently Grau is a member of ASCE and ASCE professional societies.

Honors and Distinctions: During his academic career, Grau has been the recipient of numerous teaching and research awards, including the Distinguished Professor Award by the Construction Industry Institute and the Celebration of Engineering & Technology Innovation (CETI) award by FIATECH. Complementing his academic career, he has worked in the private industry for more than ten years inclusive of positions such as program manager for heavy industrial projects and director of a large engineering department. He has led large interdisciplinary and multicultural teams to deliver numerous capital projects in South America, Africa, and Europe. Grau holds a professional license as Industrial Engineer in Spain.



Rolf Halden, PhD, PE

Professor
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Director, Center for Environmental Security
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Research Expertise: Environmental monitoring/remediation, urban metabolism, sewage epidemiology, green chemistry/engineering, exposure assessment

Halden has led over \$11M in sponsored research (NIH, EPA, DOD and DOE) at Livermore National Lab, Johns Hopkins and ASU. He has authored over 150 peer-reviewed articles, book chapters, and

patents as well as 300+ conference papers. His works include a book on contaminants of emerging concern, the first map of the human cord blood proteome, and the Human Health Observatory. Devices developed by his team for water monitoring and aquifer remediation are in commercial use at hazardous waste sites.

Honors and Distinctions: American Chemistry Society Expert (2014 –); EPA-NAS Expert Forum on Microplastics (2014); Congressional Briefing (2011); ASU Biodesign Startup Company (2010 –); NRC Committee of the National Academies (2006-07); FDA Special Government Employee and Nonprescription Drugs Advisory Committee (2005 –); Maryland State Water Quality Advisory Committee (2003-05)



Keith Hjelmstad, PhD

Professor
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Research Expertise: Computational mechanics, earthquake engineering, stability of structures, optimization, structural identification, nondestructive evaluation of large structures, and numerical simulation of complex structures

Hjelmstad is Professor of Structural Engineering in the School of Sustainable Engineering and the Built Environment (SSEBE). He previously served as University Vice President and Dean of the College of Technology and Innovation at ASU.

Honors and Distinctions: Prior to coming to ASU Hjelmstad was on the faculty at the University of Illinois at Urbana-Champaign for 25 years where he was a professor, associate dean of academic affairs, and a member of the Science Steering Committee of the *Center for Simulation of Advanced Rockets*. Hjelmstad is the author of the book *Fundamentals of Structural Mechanics* (Springer, 2/e); a member of several professional associations for engineers and serves as associate editor of the *Journal of Constructional Steel Research* and the *ASCE Journal of Structural Engineering*.



Sandra Houston, PhD, PE
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Research Expertise: Geotechnical engineering

Houston's contributions to the field of geotechnical engineering focus on unsaturated soils, including in particular advancement of methodologies for dealing with arid region problem soils, particularly collapsible and expansive soils. She joined ASU in 1984 and is the regular instructor of undergraduate and graduate level foundation engineering classes and teaches a graduate level course on

Unsaturated Soil Mechanics.

Honors and Distinctions: Leadership positions 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 is a recipient of the William H. Wisely American Civil Engineer Award, and 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 chair of the ASCE Committee on Diversity and Inclusion.



Jaewon Jang, PhD
Assistant Professor
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Research Expertise: Multiphase fluid flow through porous media for the application to gas hydrate production, shale gas recovery, CO₂ sequestration, and geothermal recovery

Jang joined the School of Sustainable Engineering and the Built Environment at Arizona State University in 2014. Prior to coming to ASU, he spent three years at Wayne State University as an assistant professor. In addition, Jang has three years of experience

at highway and tunnel construction sites in Korea. Jang's research focuses on the physical and chemical processes in soils during energy production and waste disposal such as methane production from gas hydrate-bearing sediments, geothermal energy recovery, and CO₂ sequestration.

Honors and Distinctions: Jang is a member of American Geophysical Union (AGU), International Society for Porous Media (INTERPORE), American Society of Civil Engineers (ASCE). He has 9 peer-reviewed journal papers and conference proceedings.



Paul C. Johnson, PhD, PE
Dean, Ira A. Fulton Schools of Engineering
Professor
PhD, Princeton University
Paul.C.Johnson@asu.edu

Research Expertise: Soil and groundwater remediation and risk assessment, specifically, the design, monitoring and optimization of soil and groundwater remediation systems and the monitoring and modeling of exposure pathways

Honors and Distinctions: Faculty member at ASU since 1994. Previously served as the university's associate vice president for research,

and as associate dean for research and as interim dean and executive dean for the Fulton Schools of Engineering. Prior to joining ASU, he was a senior research engineer at the Shell Oil/Shell Chemical Westhollow Technology Center in Houston, Texas. Received the 2014 Lifetime Award in Remediation sponsored by Brown and Caldwell, 2014 Nathan Burbank Environmental Educator of the Year Award from the Arizona Water Association, National Ground Water Association's Keith E. Anderson Award (2011), Strategic Environmental Research and Development Program Project of the Year Award (2011), Outstanding Educator Award from the Arizona Society of Professional Engineers (2011)



Kamil Kaloush, PhD, PE
Associate Professor
PhD, Arizona State University
Kamil.kaloush@asu.edu

Research Expertise: Pavements, materials characterization, crumb rubber applications, Urban Heat Island

Kaloush is an associate professor in the School of Sustainable Engineering and the Built Environment, affiliate faculty in the School of Sustainability, and Director of the National Center of Excellence on SMART Innovations (www.asuSMART.com) He is a registered Professional Engineer, and has over 25 years of experience in pavement

research and management services. His areas of expertise include pavement materials design, thermal properties, advanced laboratory testing, field performance evaluation, and pavement management systems.

Honors and Distinctions: Greater Phoenix Area E-Week Outstanding Engineering Educator; Rubber Pavements Association Outstanding Research Award; IRF Global Awards for RJ122 Highway Rehabilitation, Rio de Janeiro, Brazil. Kaloush 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; Vice Chair of the Technical Advisory Board of the Rubber Pavements Association, and Advisor for the ASU-ASCE student chapter.



Dean T. Kashiwagi, PhD, PE

Fulbright Professor
Director, Performance Based Studies Research Group
PhD, Arizona State University
Dean.Kashiwagi@asu.edu

Research Expertise: Supply chain best value procurement risk minimization

Kashiwagi is the worldwide expert in optimizing the delivery of construction and other services using performance information. His Performance Information Procurement System (PIPS) and Performance Information Risk Management System (PIRMS) are licensed by the U.S. Army Medical Command and the General Services Administration. Kashiwagi has generated

over \$12M in grants over 18 years, and has successfully run over 975 project tests, delivering over \$4.7B of construction and other services.

Honors and Distinctions: over 206 refereed conference and journal papers; registered engineer in eight states; 2011 Silver Award for Procurement Excellence by NASPO; 2009 International Facility Management Association Educator of the Year; 2005 CoreNet Global Innovation of the Year Award; 2001 Pono Technology Award.



Edward Kavazanjian, Jr., PhD, PE, NAE

Professor
PhD, University of California, Berkeley
edkavy@asu.edu

Research Expertise: Biogeotechnical engineering, geotechnical earthquake engineering, waste containment, mechanical properties of municipal solid waste

Honors and Distinctions: Geotechnical engineer with 20 years experience in practice and 16 years teaching and research experience, elected to the National Academy of Engineering in 2013, ASCE Karl Terzaghi Award (2011), Thomas A. Middlebrooks Award (2010), Ralph B. Peck Award

(2009), Arizona Pavements/Materials Conference Community Service Award (2012), Greater Phoenix Area eWeek Engineering Educator of the year (2009), lead-author of the Federal Highway Administration guidance document on *LRFD Seismic Analysis and Design for Transportation Geotechnical Features and Structural Foundations*, Past President of the Geo-Institute of ASCE and sits on the Transportation Research Board Committees on Seismic Design and Performance of Bridges and on Foundations for Bridges and Other Structures. Currently serves on the Board of Directors of the US University Council for Geotechnical Education and Research (USUCGER).



Rosa Krajmalnik-Brown, PhD

Associate Professor
PhD, Georgia Institute of Technology
Dr.Rosy@asu.edu

Research Expertise: Microbial ecology of important anaerobic systems such as: microbial communities for bioremediation and bioenergy production, and the human intestinal microbial ecology and its relationship to obesity, bariatric surgeries, and autism.

Krajmalnik-Brown 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. She is author of 5 patents and more than 60 peer-reviewed publications. Her research has been published in prestigious journals such as: Proceedings of the National Academy of Science, Cell, Nature Microbial Reviews, Applied and Environmental Microbiology, Environmental Science and Technology, among others.

Honors and Distinctions: Forty under Forty, class of 2012, Phoenix Business Journal; NSF CAREER award 2011-2015; AEES Outstanding 2003 Ph.D. Candidate in Environmental Engineering; Fulbright Scholar 1997-2000; Best GPA of 1996 class "Medalla al Merito Universitario" UAM-I Mexico.



Klaus S. Lackner, PhD

Professor
Director, Center for Negative Carbon Emissions
PhD, Heidelberg University, Germany
Klaus.Lackner@asu.edu

Research Expertise: Closing the carbon cycle by capturing carbon dioxide from the air, carbon sequestration, carbon foot-printing, innovative energy and infrastructure systems and their scaling properties, the role of automation, robotics and mass manufacturing in downscaling infrastructure systems, and energy and environmental policy

Lackner joined the School of Sustainable Engineering and the Built Environment at Arizona State University in 2014. Prior to coming to ASU he was the Ewing Worzel Professor of Geophysics and department chair, Earth and Environmental Engineering, at Columbia University.

Honors and Distinctions: Director of Lenfest Center for Sustainable Energy at the Earth Institute, Columbia University; American Association for the Advancement of Science Fellow (2013); Recognized for contributing to the 2007 Nobel Peace Prize for the IPCC; Co-founder of Global Research Technologies (2004).



Amy E. Landis, PhD

Associate Professor
PhD, University of Illinois at Chicago
Amy.Landis@asu.edu

Research Expertise: Industrial ecology, byproduct synergies, biofuels for bioremediation on marginal lands, biofuels, biopolymers, development of sustainability metrics, Life Cycle Assessment

Before joining ASU in January 2012, Landis was an Assistant Professor at the University of Pittsburgh's Department of Civil and Environmental Engineering. Dr. Landis is dedicated to sustainability engineering education and outreach; she works with local high

schools, after school programs, local nonprofit organizations, and museums to integrate sustainability and engineering into the undergraduate curriculum, communities, and K-12 education.

Honors and Distinctions: Carnegie Science Post-Secondary University Educator Award (2012) and Honorable Mention (2011) National Academy of Engineering; Nominated and selected to attend Frontiers of Engineering Education Symposium in Irvine, CA (2011), Fulbright Fellow to Switzerland (2004-2005) and Fulton Exemplar (2014).



Yingyan Lou, PhD

Assistant Professor
PhD, University of Florida
Yingyan.lou@asu.edu

Research Expertise: Transportation network modeling and analysis, optimization of multi-modal transportation networks, transportation operations, implications of emerging technologies and travel behaviors in transportation planning and operations, statistical modeling of transportation safety.

Lou holds a B.S. and a B.A. Econ degree from Beijing University, and received her M.S. and Ph.D. degrees in Civil Engineering from the University of Florida. Before ASU, she worked at the Department of Civil, Construction and Environmental Engineering at The University of Alabama.

Honors and Distinctions: Pikarsky Award for Outstanding Ph.D. Dissertations in Science and Technology Council of University Transportation Centers (2010); served on the Editorial Board for four journal and conference publications; member of three Transportation Research Board committees (Transportation Network Modeling, User Information Systems, and Highway Safety Performance); vice chair of the Intelligent Transportation Systems Interest Group in the Transportation and Logistics Society of the Institute for Operations Research and Management Sciences; Outstanding Area Editor Award 2012 COTA International Conference of Transportation Professionals (2012).



Michael S. Mamlouk, PhD, PE, FASCE

Professor
PhD, Purdue University
Mamlouk@asu.edu

Research Expertise: Highway materials, pavement design and management, pavement evaluation, pavement maintenance and rehabilitation

Honors and Distinctions: Over 30 years of research and teaching experience in the field of pavement/materials engineering. He recently completed an \$850,000 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, which has been used by over 125 engineering schools worldwide. Professional Engineer in the State of Arizona; Arizona Pavements/Materials Conference Community Service Award (2010).



Larry Mays, PhD, PE, PH, D.WRE, FASCE

Professor
PhD, University of Illinois
Mays@asu.edu

Research Expertise: Hydrosystems. Study of ancient water systems and the use of optimization methods for the analysis, design and operation of water infrastructure systems to promote water resources sustainability.

Mays' research has been published in over 210 peer-reviewed and proceeding papers, over 70 chapters in books he edited, and another invited 8 book chapters. He is the author, co-author or editor-in-chief

of 23 books including the Water Resources Engineering; Groundwater Hydrology; Applied Hydrology; Hydrosystems Engineering and Management; Water Resources Handbook; Water Distribution Systems Handbook; Hydraulic Design Handbook.

Honors and Distinctions: 1992 ASPE Engineer of the Year in Education Award, 1993 AWPCA Quentin Mees Research Award, 1999 distinguished alumnus award University of Illinois at Champaign-Urbana, a fellow of ASCE and IWRA, president of UCOWR, 2014 ASCE Julian Hinds Award, and the 2014 Prince Sultan Bin Abdulaziz International Water Prize – Surface Water, and a Lifetime Member of ASCE.



Barzin Mobasher, PhD, PE

Professor
PhD, Northwestern University
Barzin@asu.edu

Research Expertise: Mechanics of composite materials, development of new construction materials, durability of building materials, and performance based specifications

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. Mobasher has published more than 150 peer-reviewed research papers on the

mechanics and durability of concrete technology, and has delivered more than 120 technical presentations worldwide.

Honors and Distinctions: Fellow of the American Concrete Institute (ACI) (2009); member of the American Society of Civil Engineers (ASCE) and American Ceramic Society and member of the International Editorial Board of Computers and Concrete; author of "Mechanics of Fiber and Textile Reinforced Cement Composites"; paper titled: Mechanical behavior of strain-hardening cement-based composites (SHCC) under low and high tensile strain rates was selected among the top three papers in 2011 by the Japan Concrete Institute.



Narayanan Neithalath, PhD

Associate Professor
PhD, Purdue University
Narayanan.Neithalath@asu.edu

Research Expertise: Materials science of cementitious systems including chemistry-based design of novel and carbon-neutral materials for desired performance, material characterization, property prediction and sensing, experimental mechanics, and computational modeling of material response at multiple scales

His specific expertise is in the materials science of cements and concrete, including development of new materials, and composition-microstructure-property relationships that aid in material design. He has published around 150 papers in peer reviewed journals and conference proceedings, and has received several awards for his work on novel concrete materials. <http://faculty.engineering.asu.edu/neithalath>

Honors and Distinctions: NSF CAREER Award (2008); Bengt Friberg Award (2005) for the Best Paper by a Young Author– 8th International Conference on Concrete Pavements, Colorado Springs, CO; Portland Cement Association (PCA) Fellowship (2003) for research on Enhanced Porosity Concrete systems; Section Editor (Cementitious Materials) – ASCE Journal of Materials in Civil Engineering; Member of the editorial board of Cement and Concrete Composite.



Kristen Parrish, PhD

Assistant Professor,
PhD, University of California Berkeley
Kristen.Parrish@asu.edu

Research Expertise: Energy efficiency in commercial buildings, lean construction, integrated project delivery, decision-making systems

Parrish joined the School of Sustainable Engineering and the Built Environment in 2012. She has a Sustainability Scientist appointment in the Global Institute of Sustainability. Previously, she was a Scientific Engineering Associate at the Lawrence Berkeley National Laboratory and a lecturer at the University of California Berkeley. Parrish's work

focuses on integrating energy efficiency measures into building design, construction, and operations processes. Specifically, she is interested in novel design processes that financially and technically facilitate energy-efficient buildings.

Kristen served as the Faculty Adviser for the Construction Team of the Arizona State University-University of New Mexico Solar Decathlon team.

Honors and Distinctions: Celebration of Engineering & Technology Innovation (CETI) award from FIATECH (2007); Outstanding Performance Award at Lawrence Berkeley National Laboratory (2010), Best Mentor Award (2012) for her work with Technovation, a program that seeks to develop math and science skills in high school girls.



Subramaniam (Subby) Rajan, PhD

Professor
PhD, University of Iowa
S.Rajan@asu.edu

Research Expertise: Finite element based design optimization, parallel computations, constitutive material modeling

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.

Honors and Distinctions: Outstanding Engineering Educator of the Year (2009) awarded during Greater Phoenix Area Engineer's Week; Top Five Percent Faculty Award from Ira A. Fulton Schools of Engineering (2008); member of the Educator Advisory Board for the Kno Corporation; Board member for the Resource Center for Global Ecohappiness and Faculty Expert for the Indo-US Collaboration for Engineering Education.



T. Agami Reddy, PhD, PE

Professor
PhD, Thermodynamics and Energy Laboratory,
University of Perpignan, France
T.Agami.Reddy@asu.edu

Research Expertise: Sustainable energy, building energy data analytics and knowledge extraction for efficient operation of building energy systems, green building technologies and solar systems

Honors and Distinctions: 2014 Yellott Award by the Solar Energy Division of the American Society of Mechanical Engineers (ASME), SRP Professor of Energy and Environment with joint faculty

appointments with The Design School and the School of Sustainable Engineering and the Built Environment, courtesy teaching appointments in the School for Engineering of Matter, Transport and Energy and the School of Sustainability, licensed mechanical engineer, a Fellow of the American Society of Mechanical Engineers (ASME) and the American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE), former Chair of the ASME Solar Energy Division, and incoming Chair of the ASHRAE Research Committee.



Thomas P. Seager, PhD

Associate Professor
PhD, Clarkson University
thomas.seager@asu.edu

Research Expertise: resilient infrastructure systems, life cycle assessment of emerging technologies, team science

Seager leads research teams working at the boundaries of engineering and social science to understand resilient infrastructure systems, the life-cycle environmental consequences of emerging energy technologies, novel approaches to teamwork and communication in socio-technical

integrative settings, and engineering ethics education.

Honors and Distinctions: Seager is the founder and President of the Sustainability Conoscente Network, a community of scholars and practitioners sharing knowledge related to a systems approach to sustainable technologies. He chairs the annual *International Symposium on Sustainable Systems and Technologies* and has co-founded two startup companies resulting from research conducted at ASU.



Bruce Rittmann, PhD, NAE

Regents' Professor
Director, Swette Center for Environmental Biotechnology
PhD, Stanford University
Rittmann@asu.edu

Research Expertise: 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.

Honors and Distinctions: Membership in the National Academy of Engineering (NAE), Distinguished Member of ASCE, a Fellow of the AAAS and the IWA, the Huber and Freese Awards from the ASCE, and appointment as a Regents' Professor at ASU, more than 510 publications and on the ISI's List of Most Highly Cited Researchers.



Kenneth T. Sullivan, MBA, PhD

Associate Professor
PhD, University of Wisconsin-Madison
Kenneth.Sullivan@asu.edu

Research Expertise: performance measurement, organizational change, value-based contracting, risk management, project delivery, project controls

Sullivan has conducted his research across the project life-cycle including design, construction, facility management, IT, finance, and numerous business services. The research is applied at both organization and project levels, including organizational

transformation, contract optimization, risk management, project management, and accountability systems. He has worked with federal, state, local, and private organizations with his concepts being applied real-time on over \$4 Billion worth of projects.

Honors and Distinctions: Sullivan has a PhD, MS, and BS in Civil and Environmental Engineering and a MBA in Real Estate and Urban Economics all from the University of Wisconsin-Madison; 2014-2016 Fulton Exemplar; 2013 IFMA Educator of the Year; 2012 ASCE Leadership and Management in Engineering Journal Best Article Award.



Pingbo Tang, PhD

Assistant Professor
PhD, Carnegie Mellon University
tangpingbo@asu.edu

Research Expertise: Automated as-built building modeling and spatial analysis, construction and facility management, 3D imaging for quality; control, quality assessment of BIM and spatial data, scientific workflow and urban systems engineering

Tang serves as a member of TRB Committee on Bridge Management, ASCE, and ASTM Committee E57 (3D imaging systems). He is an associate editor of ASCE Journal of

Computing in Civil Engineering.

Honors and Distinctions: Best Paper Award Construction Research Congress, ASCE (2009), Best Poster Award of Construction Industry Institute Annual Conference (2011), and the CEE Recent Alumnus Achievement Award of Carnegie Mellon University (2013).



B. Shane Underwood, PhD

Assistant Professor
PhD, North Carolina State University
Shane.Underwood@asu.edu

Research Expertise: Pavement materials characterization and design, performance modeling, scale dependent characterization and modeling of infrastructure materials, advanced laboratory testing of construction materials, sustainable pavement strategies

Underwood is the Co-Director of Sustainable Materials in Civil Infrastructure at the National Center of Excellence on SMART Innovations. He holds M.S. and Ph.D. degrees from North Carolina State

University in Transportation Materials and Civil Engineering. His primary area of expertise is in experimental mechanical characterization and modeling of infrastructure materials.

Honors and Distinctions: Underwood is a member of ASCE and TRB where he participates in the Engineering Mechanics Institute and Characteristics of Asphalt Paving Mixtures to Meet Structural Requirements committee respectively. He has received several fellowships and scholarships in support of his research including the prestigious Dwight D. Eisenhower Graduate Research Fellowship.



Enrique R. Vivoni, PhD, PE

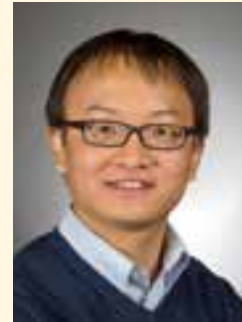
Associate Professor
PhD, Massachusetts Institute of Technology
vivoni@asu.edu

Research Expertise: hydrologic theory, numerical modeling and field techniques; applications of remote sensing and geographical information systems; water resources sustainability

Vivoni is well known for his research in 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 engineering hydrology, watershed modeling and ecohydrology.

Honors and Distinctions: Vivoni is the recipient of several awards including the Presidential Early Career Award for Scientists and Engineers (2008), the U.S. Fulbright-Garcia Robles Scholarship (2009) and the Kavli Science Fellowship (2010). He is an active member of the American Geophysical Union, American Society of Civil Engineers and American Meteorological Society. Vivoni is a Senior Sustainability Scientist in the Global Institute of Sustainability at ASU and holds a joint appointment in the School of Earth and Space Exploration.



Zhihua Wang, PhD

Assistant Professor
PhD, Princeton University
zhwang@asu.edu

Research Expertise: Sustainable urban environment under the changing climate

Wang conducts research in urban meteorology and hydrology, including soil-land-atmosphere-climate interactions, turbulent transport of energy and water, mitigation strategies of urban heat island effect, and the long-term sustainability of cities.

Honors and Distinctions: Wang is an active member of the American Meteorological Society (AMS), American Geophysical Union (AGU), American Physical Society (APS) and International Association for Urban Climate (IAUC). He obtained first class honor Bachelor's degree in civil and environmental engineering. Wang is currently the co-director of climate systems research for the National Center of Excellence on SMART Innovations, and a senior sustainability scientist in the Global Institute of Sustainability at ASU.



Paul Westerhoff, PhD, PE

Professor and Vice Provost of Academic Research Programming
PhD, University of Colorado
p.westerhoff@asu.edu

Research Expertise: detection and treatment of emerging pollutants in water and wastewater

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 WRF, WERF, USEPA, NSF, and local organizations investigating the fate of nanomaterials in water,

use of nanomaterial-based technologies for water and reuse treatment, reactions and fate of oxoanions (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. He has over 150 peer reviewed journal article publications and has been involved in over 250 conference presentations.

Honors and Distinctions: Member of the USEPA Science Advisory Board; Vice Chair of the WaterReuse Foundation Research Advisory Board; external advisory board member of the EPA-NSF Center for Environmental Impacts of Nanotechnology; 2013 AEESP/Arcadis Frontier in Research Award, 2005 ASCE Walter L. Huber Research Award and 2006 WEF Paul L. Busch Award.



Avi Wiezel, PhD, PE

Associate Professor
Assistant Dean for Facilities, IAFSE
PhD, Technion-Israel Institute of Technology
avi.wiezel@asu.edu

Research Expertise: Leadership in construction management, buildability modeling, construction education

A faculty member since 1995, 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.

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).

Honors and Distinctions: Top 5% of best teachers in the Ira A. Fulton Schools of Engineering; Outstanding Faculty Member Award; served as Coordinator of Construction Graduate Studies and the Interim Chairman of the Del E. Webb School of Construction Management Programs.



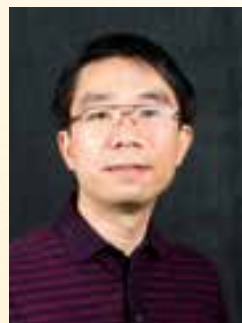
Claudia E. Zapata, PhD

Associate Professor
PhD, Arizona State University
claudia.zapata@asu.edu

Research Expertise: Unsaturated soil behavior with focus on laboratory and field characterization of problematic soils; applications related to the hydro-thermal and mechanical behavior of soil material due to static and repeated loading; and the environmental effects on soil behavior.

A member of the ASU faculty since 2006, Zapata has actively participated in several NCHRP research projects, including the development of the most current ME Pavement Design Guide. Current research activities include the study of fundamentals behind fluid flow due to thermal gradients and how it affects airfield pavement structures; and the introduction of unsaturated soil principles into undergraduate curriculum.

Honors and Distinctions: Zapata is the author of more than 50 technical publications focusing on expansive soils, unsaturated soil properties predicting models, and environmental effects on pavement design. She currently serves as the Chair of the Transportation Research Board committee on the Engineering Behavior of Unsaturated Soils.



Xuesong Zhou, PhD

Associate Professor
PhD, University of Maryland
xzhou74@asu.edu

Research Expertise: Dynamic traffic assignment, traffic demand analysis, traffic flow estimation and prediction, train timetabling and real-time dispatching, visualization analytics

Zhou joined SSEBE in 2013. Previously, he was an associate professor at University of Utah. He has been assisting the Federal Highway Administration (FHWA) to develop and provide technical support for large-scale simulation based dynamic traffic assignment systems, for the past 10 years. He is the Co-Chair of the IEEE ITS Society Technical Committee on Traffic and Travel Management, Public Relations Officer for Institute for Operations Research and the Management Sciences, Railway Applications Section (RAS). He also serves as the Chair for the Network Equilibrium Modeling Subcommittee in TRB Committee on Transportation Network Modeling (ADB30). He is also the co-inventor of Key2SafeDriving technologies, which has been reported by more than 300 media outlets including New York Times, Wall Street Journal and National Public Radio.

Honors and Distinctions: Zhou and his students received the Best Paper Award in the 15th IEEE International Intelligent Transportation Systems Conference.

Research faculty



Absar Alum, PhD

Assistant Research Professor
PhD, University of Arizona
Alum@asu.edu

Research Expertise: Health related environmental microbiology, microbial pathogen survival and detection, and endocrine disrupting chemicals in water



Paul Dahlen, PhD

Assistant Research Professor
PhD, Arizona State University
Paul.Dahlen@asu.edu

Research Expertise: Assessment and remediation of hydrocarbon impacts to soil/groundwater



Thomas A. Dempster, PhD

Associate Research Professor
PhD, Arizona State University
Arizona Center for Algae Technology and Innovation
dempster@asu.edu

Research Expertise: Phycology; algal taxonomy and physiology; large-scale cultivation of microalgae for biofuels and high value products; bioremediation of air (CO₂ capture) and wastewater (nutrient uptake) using microalgae



Henri Gerken, PhD

Research Scientist Sr.
PhD, Arizona State University
Arizona Center for Algae Technology and Innovation
hgerken@asu.edu

Research Expertise: Understanding the cell walls of microalgae for the purposes of enzymatic digestion for enhanced extraction of biofuels and fine products produced in the algae; genetic engineering of algae for enhanced production of bioproducts



Della M. Roy, PhD, NAE, WAC

Research Professor
Della.Roy@asu.edu
Part-time joint appointment in the School of Sustainable Engineering and the Built Environment and the School of Mechanical Aerospace, Chemical and Materials

Research Expertise: Materials synthesis, processing characterization in inorganic, ceramic, cement and mineral systems



Thomas Schleifer, PhD

Assistant Research Professor
Del E. Webb School of Construction
PhD, Heriot-Watt University, Scotland
Thomas.schleifer@asu.edu

Research Expertise: Construction management and economics



Robert Stirling, MBA

Research Technologist
Swette Center for Environmental Biology
MBA, Duke University
Robert.stirling@asu.edu

Research Expertise: Startup technology marketing expertise; entrepreneurship, including new product modeling techniques, licensing practices and product development practices



Pierre Wensel

Research Engineer
Arizona Center for Algae Technology and Innovation
Pierre.Wensel@asu.edu

Research Expertise: Design, construction, control, and optimization of upstream cultivation and downstream harvesting microalgal processes

Lecturers



Amie Baisley, MS

Lecturer
MS, Arizona State University
Amie.baisley@asu.edu

Teaching/Research Expertise: Teaching focuses on the engineering mechanics courses. Research areas include design optimization and finite element analysis.



Aaron Cohen, MS, CPC

Lecturer
Associated General Contractors (AGC) Lecturer
MS, DePaul University
Aaron.cohen@asu.edu

Teaching/Research Expertise: Teaching focuses on courses in the heavy/civil concentration for the DEWSC Construction Management degree program.

Lecturers



Kraig Knutson, PhD

Senior Lecturer
PhD, Arizona State University
Kraig.knutson@asu.edu

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



Christopher Lawrence, PhD

Lecturer in CESE and CNE Programs
PhD, Arizona State University
Chris.lawrence@asu.edu

Teaching Expertise: Teaching areas include engineering mechanics and numerical methods, civil engineering materials, and geotechnical engineering.

Research Expertise: Research and engineering focus on soil suction measurements, unsaturated soil mechanics, and the development of advanced soil testing systems.



Kristen Ward, PhD

Lecturer
PhD, University of Arizona
Kmward6@asu.edu

Teaching/Research Expertise: Structural Engineering, Engineering Mechanics, Earthquake Engineering, Numerical Methods



Edwin C. Weaver, BS, MCE, PE

Senior Lecturer in DEWSC Program
MCE, North Carolina State University
Edwin.weaver@asu.edu

Teaching Expertise: Teaches and develops graduate and undergraduate courses in the concrete construction safety and Project Management and Construction Management degree programs.

Research Expertise: Contracts and specifications for concrete construction, concrete paving for airfields and roadways and safety during concrete and masonry construction operations.

Professor of Practice



Wylie K. Bearup, PhD, PE

Professor of Practice
Executive Director, Alliance for Construction Excellence
Beavers-Ames Professor of Practice for the Heavy Civil Program, Del E. Webb School of Construction
PhD, University of Illinois
Wylie.bearup@asu.edu

Research Expertise: Construction project delivery methods, Virtual Design and Construction, design-construction interface, construction contracting methods, partnering and dispute resolution processes.



Jeffrey Goss, MA

Professor of Practice
Executive Director for the Office of Global Outreach and Extended Education
Assistant Dean in the Ira A. Fulton Schools of Engineering
MA, George Washington University · Jeffrey.Goss@asu.edu

Research Expertise: Global workforce development learning models and the development and application of new technologies and distributed-media models for adult learning.



Each year the Ira A. Fulton Schools of Engineering recognize the outstanding work of Fulton Engineering staff through the IMPACT and Fulton Difference awards. The Teamwork award which recognizes a team that strives for the highest possible standards and distinguishes themselves by exemplifying teamwork, communication and positive interaction was won by the Business Managers Human Resources team. **Alicia Stiers**, Business Operations Manager in SSEBE, is a member of this year's winning team.



Dr. Ram Pendyala, professor in SSEBE, has resigned his faculty position at ASU to take an Endowed Chair position at Georgia Institute of Technology effective fall 2014. We wish to thank Dr. Pendyala for his great service to our program and his willingness to volunteer and pitch in on special projects. We congratulate him and wish him well in his new position.

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ARIZONA STATE UNIVERSITY