Vision Statement
We strive to be a community of scholars in which students are engaged in diverse learning experiences with faculty and staff who are devoted to student success and professional achievement.

Mission Statement
Through contemporary curricula, engaging pedagogy, student support, scholarship and applied research, we produce career-ready graduates prepared for a lifetime of professional achievement and intellectual growth.
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We define student success as the ability to think critically, grow professionally, achieve goals, and contribute to the community. I am so proud of our staff and faculty who are dedicated to the advancement of student success in our college. Because of their talent, creativity, and personal interest in our students, our College of Engineering and Computer Science is a top employer destination for engineering, computer science and construction management leaders.
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The Office of Water Programs (OWP), a unit of academic affairs, is a multidisciplinary center providing training, technical assistance, and applied research services for water resources and water quality disciplines. OWP's mission is to provide cost-effective solutions for protecting and enhancing water resources, public health, and the environment. OWP's training materials have supported the drinking water and wastewater professions for over 40 years, earning it an international reputation as a leader in this field.

State and local agencies fund applied research and engineering management projects in wastewater, stormwater, watershed planning, flood modeling, and groundwater. Through a federal grant, OWP serves as the US EPA Region 9 Environmental Finance Center (EFC) which supports rural, disadvantaged, and tribal communities throughout the west in financial planning and utilities asset management.

OWP staff collaborate with Sac State and other CSU faculty from engineering, natural sciences, public policy, and economics. OWP is currently the largest self-supported center in the CSU system with 50 full-time professionals and students. For more information please go to www.owp.csus.edu.
Civil engineers design and maintain public works such as roads, bridges, water and sewage systems as well as public facilities like ports, railways, and airports. Civil engineers are instrumental in planning, analyzing, and designing the facilities that touch many aspects of our everyday lives—from the water we drink to the roads we use to get to work or school to the buildings where we live and work.
Teaching Interests
Transportation Engineering and Planning; Traffic Engineering and Design; Statistics for Engineers; Highway Geometric Design.

Areas of Scholarship
Transportation Safety and Human Factors; Traffic Control Devices and Technologies; Active Transportation.

Scholarship Statement
With the help of driving simulators, instrumented vehicles, and microsimulation software, I investigate the role of human factors on mobility and safety, considering alternative designs for vehicle automation and transportation infrastructure.

Selected Publication
CIVIL ENGINEERING

Cyrus Aryani, P.E., G.E.
Ph.D. Civil Engineering
Utah State University ‘84
Professor

Teaching Interests
Soil Mechanics; Foundation Engineering; Slope Stability Analysis and Landslide Stabilization; Soil Improvement; Retaining Structures; and Geosynthetics.

Areas of Scholarship

Scholarship Statement
Designing safe foundation systems for support of buildings and bridges; analysis and design of earth dams for reservoirs; design and improvement of levees for flood protection; stabilizing slopes and sites for construction purposes.

Selected Publication

CIVIL ENGINEERING

Ed Dammel
Ph.D. Environmental Engineering
University of California, Davis ‘97
Associate Professor

Teaching Interests
Environmental Engineering and Computational Methods.

Areas of Scholarship
Bioremediation and Stormwater Quality.
CIVIL ENGINEERING

Zoi Dokou
Ph.D. Civil and Environmental Engineering
University of Vermont ’08
Assistant Professor

Teaching Interests
Fluid Mechanics, Groundwater Hydrology, and Contaminant Transport

Areas of Scholarship
Groundwater; Non aqueous phase liquid (NAPL) fate in the subsurface and remediation; Water resource optimization and Seasonal forecasting.

Scholarship Statement
People around the world are increasingly dependent on groundwater because of its buffer capacity. I combine field measurements, laboratory experiments and numerical modeling to understand and predict the behavior of groundwater systems and their interconnection with surface water systems, focusing on both water quantity and quality.

Selected Publication

CIVIL ENGINEERING

Benjamin Fell, P.E.
Ph.D. Civil and Environmental Engineering
University of California, Davis ‘08
Associate Professor
Chair, Department of Civil Engineering

Teaching Interests
Structural analysis; Steel design; Structural dynamics; earthquake engineering.

Areas of Scholarship
Large-scale experimental techniques; Earthquake engineering, and Resilient light-framed structures.

Scholarship Statement
Earthquake loads typically govern the lateral load cases for structural design in large regions of the Western U.S. My research focuses on improving our understanding of structural behavior during earthquakes so that we can reduce the risk to society.

Selected Publication
Julie Fogarty
Ph.D. Civil Engineering
University of Michigan ’15
Assistant Professor

Teaching Interests
Structural analysis; Steel design; and Solid mechanics.

Areas of Scholarship
Design of Steel Structures; Earthquake Engineering; and Educational Tools.

Scholarship Statement
Understanding steel column behavior under extreme events is necessary for the safe and efficient design of steel structures. To improve this understanding, my research focuses on steel columns that have experienced local flange damage as well as those subjected to seismic loading.

Selected Publication

Jose E. Garcia
Ph.D. Civil Engineering
University of Texas at Austin ’18
Assistant Professor

Teaching Interests
Civil Engineering Materials, Concrete Durability, Reinforced Concrete Design, Concrete Repair

Areas of Scholarship
Concrete Durability; Novel Structural Materials; Ultra-High Performance Concrete; Cement and Concrete Chemistry; Concrete Repair

Scholarship Statement
My research focuses on identifying new ways to produce concrete that is more environmentally friendly, durable, and resilient. After water, concrete is the second most widely used substance in the world and small changes in concrete production can have a drastic impact on everyday life.

Selected Publication
Karen Lee Hansen  
*Ph.D. Civil Engineering*  
Stanford University ‘93  
*M.S. Construction Management*  
Stanford University ‘85  
Professor

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**Teaching Interests**  
CE Professional Practice; Sustainable Design and Construction; Project Management and Innovative Project Delivery.

**Areas of Scholarship**  
Civil Engineering Professional Practice; Sustainability and Infrastructure Resilience; Design Build and Integrated Project Delivery.

**Scholarship Statement**  
I am highly motivated to communicate the value of C. E. and C. M. to those outside the profession as a way of elevating the public discussion regarding our decaying infrastructure and of attracting potential students.

**Selected Publication**  

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John Johnston, P.E.  
*Ph.D. Civil Engineering*  
University of California, Davis ‘91  
Professor

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**Teaching Interests**  
Environmental Engineering: Water Quality, and Treatment Processes; Water Resources Engineering.

**Areas of Scholarship**  
Stormwater Quality and Treatment Best Management Practices (BMPs).

**Scholarship Statement**  
Stormwater pollutants contribute to the impairment of many water bodies. We need efficient and affordable treatment processes that can fit into existing dispersed infrastructure and operate under a variety of hydrologic conditions.

**Selected Publication**  
CIVIL ENGINEERING

Ghazan Khan  
Ph.D. Civil and Environmental Engineering  
University of Wisconsin, Madison ‘12  
Associate Professor

Teaching Interests  

Areas of Scholarship  
Roundabouts, Design and Safety of Horizontal Curves; Crash Data Analysis, Statistical Modeling in Transportation; Applications of GIS in Transportation Engineering.

Scholarship Statement  
Approximately 35,000 people died in road crashes last year which is 96 fatalities everyday of the year. My research helps find the causes of these crashes and develop strategies to make our roads safe and efficient for all users.

Selected Publication  

Ramzi J. Mahmood, P.E.  
Ph.D. Civil Engineering  
Utah State University ‘88  
Professor  
Director of Office of Water Programs

Teaching Interests  
Geo-Environmental Engineering; Engineering Statistics and Data Analysis; Transport Modeling.

Areas of Scholarship  
Environmental Data Analysis; Decision Making; Highly Variable Data; Spatial Analysis; Numerical Methods and Solutions; Contaminated Site Characterization.

Scholarship Statement  
My research group provides technical advice on water policy issues; assists in watershed planning; and performs modeling, data analysis, and cost assessments to help both the public and private sectors make informed decisions. My training group provides training for operators and managers of water and wastewater treatment plants.

Selected Publication  
Teaching Interests
Structural Concrete; Precast, Prestressed Concrete; Earthquake Engineering.

Areas of Scholarship
Accelerated Bridge Construction using Precast Bridge Elements and Systems; Seismic Connections for Precast Systems; Anchorage to Concrete.

Scholarship Statement
Accelerated Bridge Construction technologies are critical to rehabilitate, repair, or replace ~250,000 deficient bridges, many in seismic regions. My research develops seismic precast elements and systems as a prime solution to this problem.

Selected Publication

Teaching Interests
Water Resources Infrastructure; Watershed Modeling and Management; Water Resources Planning.

Areas of Scholarship
Modeling of Water Resources Infrastructure; Watershed Modeling; Climate Change Impacts and Adaptation.

Scholarship Statement
My research is applied in nature and focuses on the design, analysis and modeling of water resources infrastructure. I am studying the impacts of climate change on hydrology, water supply and management, and developing adaptation strategies.

Selected Publication
Amir M. Motlagh  
*Ph.D. Civil and Environmental Engineering*  
University of Utah ‘16  
Assistant Professor  

**Teaching Interests**  
Environmental Engineering; Wastewater Treatment; Water Reuse; Environmental Microbiology.  

**Areas of Scholarship**  
Interface of environmental process engineering and environmental microbiology; Understand the microbial communities involved in environmental processes, Optimization of nutrient removal processes in wastewater treatment.  

**Scholarship Statement**  
Wastewater is the black gold in a new era of sustainability. My research focuses on biological wastewater treatment and resource recovery. It is so interesting to study what amazing jobs bacteria can accomplish in a very sustainable way!  

**Selected Publication**  

Cristina M. Poindexter, P.E.  
*Ph.D. Civil and Environmental Engineering*  
University of California, Berkeley ‘14  
Assistant Professor  

**Teaching Interests**  
Fluid Mechanics; Hydrology; and Transport and Mixing in the Environment.  

**Areas of Scholarship**  
Wetland restoration and Wetland Accretion; Air-water and Land-atmosphere Gas Fluxes; and Water Flow Measurement Technology.  

**Scholarship Statement**  
Rising sea levels threaten low lying areas and infrastructure; wetlands can help mitigate these threats by accreting sediment and organic matter, and damping waves. My research identifies how wetland restoration projects can maximize these benefits.  

**Selected Publication**  
Kimberly Scott-Hallet

M.S., Structural Engineering and Mechanics
University of Washington (Seattle), 98
Full-Time Lecturer

Teaching Interests
Statics, Mechanics of Materials, Structural
Design Electives

Areas of Scholarship
Structural Analysis; Building Design;
Construction Administration; Forensic
Engineering and Building Collapse Analysis.
Computer Science is a systematic study of computing and its applications, ranging from its theoretical and algorithmic foundations to the cutting-edge technologies in many areas including computer architecture and engineering, computer graphics and games, computer networks and data communication, database systems, information assurance and security, intelligent systems, mobile and ubiquitous computing, system software, and software engineering.
Behnam S. Arad  
Ph.D. Electrical Engineering  
Louisiana State University ‘97  
Professor  
Coordinator, Computer  
Engineering Program

Teaching Interests  
Hardware Design and Validation using  
EDA tools; Computer architecture;  
Parallel computing.

Areas of Scholarship  
Design of Power-efficient Hardware;  
Validation of Complex Embedded Systems;  
Hardware Security.

Scholarship Statement  
My research focuses on the design of secure  
and power-efficient hardware. Energy  
efficiency and security are important design  
considerations for mobile devices.

Selected Publication  
“Customized Intrusion Detection Based on a  
Database Audit Log”, Thomas Le, Bill Mitchell,  
Behnam Arad. Proceedings of the 34th CATA  

“Design of a Power Aware Encryption Accelerator”,  
Muhammad H. Pervaiz, Behnam Arad.  
79-84, October 2017.

Anna Baynes  
Ph.D. Computer Science  
University of Michigan ‘12  
Assistant Professor

Teaching Interests  
Information Visualization, Algorithms, Software  
Engineering, Information Analytics

Areas of Scholarship  
Information Visualization, Visual Analytics

Scholarship Statement  
My research focuses on new techniques to  
improve analytics and visualization techniques  
for large data sets.

Selected Publication  
A. Shaverdian, H. Zhou, H. V. Jagadish and G.  
Michailidis. A Graph Algebra for Visual Analytics,  
Visualization and Data Analysis, 2012.
Teaching Interests
Operating System Coding; Compiler Writing; System Programming; and Computer Architecture and Organization.

Areas of Scholarship
Intelligent devices and applicable hidden-Markov modeling techniques.

Scholarship Statement
Incorporation of modeling computations to device controls. Developing accurate and predictive computer models through simulations for complex time-series systems.

Selected Publication

Teaching Interests
(No)SQL Databases; Data Analytics and Mining; Dynamic Webs, Data Science Education.

Areas of Scholarship
Machine Learning; Security on Location-based Social Networks; Cyber-Physical Systems.

Scholarship Statement
My goal is to develop scalable machine learning/secure algorithms for big data in urban spaces, including data sensing, management, analytics, and visualization, to tackle the issues that cities face.

Selected Publication
"Scaling up Markov Logic Probabilistic Inference for Social Graphs," IEEE Transactions on Knowledge and Data Engineering (TKDE), ’16
"Leveraging Spatio-Temporal Redundancy for RFID Data Cleansing," ACM International Conference on Mgmt. of Data (SIGMOD), ’10
Teaching Interests
Algorithms; Security; Cloud Computing.

Areas of Scholarship
Security; Privacy; Social Computing; Cloud Computing.

Scholarship Statement
My research focuses on developing techniques and strategies that help users enjoy sharing while keeping their data away from inappropriate access. I’m currently interested in applying these techniques in social computing, cloud computing, and Internet of Things, which all share one common characteristic: relationships.

Selected Publication

Teaching Interests
Network Security; Computer Networking; Computer Forensics

Areas of Scholarship
Network and Distributed System Security; Big Data in Enterprise Cyber Security Space; Cloud Security; Mobile Security.

Scholarship Statement
Standing on the defense side of the cyber warfare, my research addresses emerging security concerns in large-scale networks or mobile systems. My work delivers macroscopic perspectives, and helps people identify new problems or get better solutions.

Selected Publication
**COMPUTER SCIENCE**

**Nikrouz Faroughi**  
*Ph.D. Electrical Engineering*  
Michigan State University ’87  
Professor  
Chair, Department of Computer Science

**Teaching Interests**  
Digital Logic; Computer Architecture.

**Areas of Scholarship**  
Single and Multiprocessor Systems Architecture; Computer Security through Hardware.

**Scholarship Statement**  
As more data are created, processed, and transmitted, both demand for more powerful computers and the possibility of unauthorized access to data increase. Hardware—better than software—can play a role in keeping digital systems secure.

**Selected Publications**  

**COMPUTER SCIENCE**

**Isaac Ghansah**  
*Ph.D. Computer Engineering*  
Iowa State University ’87  
Professor

**Teaching Interests**  
Computer Security and Privacy; Computer Networks; and Computer Architecture.

**Areas of Scholarship**  
Security Issues in Critical Infrastructures such as Smart Grid; and Computer Forensic Investigation.

**Scholarship Statement**  
I am interested in designing systems and networks to withstand cyber attacks. This allows you to use the Internet safely and making it difficult for attackers to steal your personal critical information or shut down your computerized device.

**Selected Publication**  
V. Scott Gordon
Ph.D. Computer Science
Colorado State University ’94
Professor

Teaching Interests
Graphics Programming; Video Game Architecture; Artificial Intelligence; Computing Theory and Languages.

Areas of Scholarship
Artificial Intelligence; 3D Graphics/GPU Shader Programming; Neural and Evolutionary Computation.

Scholarship Statement
My artificial intelligence research has focused on neural networks, genetic algorithms, and game tree search. I am also interested in GPU shader programming and its application to 3D graphics, game engine architecture, and virtual reality.

Selected Publications

Ying Jin
Ph.D. Computer Science and Engineering
Arizona State University ’04
Professor

Teaching Interests
Database Design, Database System Implementation, Data structures; Algorithm Analysis.

Areas of Scholarship
Database Systems and Applications; Event and Rule Processing in Centralized and Distributed Environments; Data Security and Privacy.

Scholarship Statement
My research focuses on various aspects related to data management such as database system structuring and application design, and data security. It facilitates data-centric application design in an efficient, secure way.

Selected Publication
Y. Jin and K. Kaja, “XACML Implementation Based on Graph Databases,” the Proceedings of the 34th International Conference on Computers and Their Applications, March 2019, Hawaii, USA.
Teaching Interests
- Computer programming, Discrete mathematics, Design and Analysis of Algorithms: Compilers, Cryptography.

Areas of Scholarship
- Machine Learning and Applications.

Scholarship Statement
My work focuses on making it harder to make mistakes when using cryptography and at the same time making cryptography computationally less expensive. These two goals make good cryptography more attractive to use.

Selected Publications

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Professor

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Meiliu Lu
Ph.D. Computer Science
University of Illinois '87
Professor

Selected Publication

Teaching Interests
- Data Analytics and Data Mining, Machine Learning, Computing Theory.
- Machine Learning and Applications.

Scholarship Statement
My research is about machine learning and applications in data mining such as actionable knowledge creation, predictive models for use by humans, and natural language processing.

Selected Publication
Teaching Interests
Computer Games and Graphics; Mobile Computing; GPU Computing.

Areas of Scholarship
GPU Computing; Mobile Computing; Artificial Intelligence.

Scholarship Statement
I research GPU computing in various domains including mobile and embedded systems (multitasking among real-time tasks), automotive computing (recognizing speed-limit signs), and medical imaging (performing image registration). Also, research in artificial intelligence (building robotic controllers) and machine learning (implementing sampling methods).

Selected Publication
Hady Ahmady Phoulady  
Ph.D. Computer Science and Engineering  
University of South Florida, ’17  
Assistant Professor

Teaching Interests  
Machine Learning, Algorithm Design and Analysis, Data Structures, Programming

Areas of Scholarship  
Machine Learning, Digital Image Processing, Image Segmentation

Scholarship Statement  
My research focuses on developing Computer-Aided Diagnosis systems to process medical images. The main goal of my research is to classify medical images, detect and segment regions of interest such as cells and nuclei in images and quantify diseases.

Selected Publication  

COMPUTER SCIENCE

Ahmed M. Salem  
Ph.D. Computer Science  
Florida Institute of Technology ’01  
Professor

Teaching Interests  

Areas of Scholarship  
Requirements Specification and Design Modeling; Verification and Validation Methodology and Techniques; Information Assurance.

Scholarship Statement  
Research is an essential component in advancing our university and community. With research, new ideas, theories, and techniques are discovered which will enable us to explore greater heights and to achieve further goals in teaching and learning.

Selected Publication  
Ghassan Shobaki  
Ph.D. Computer Science  
University of California, Davis ’06  
Associate Professor

Teaching Interests
Compilers; Algorithms and Theory of Computation; Operating Systems.

Areas of Scholarship
Compiler Optimizations; Combinatorial Optimization Algorithms; Computer Architecture and System Performance.

Scholarship Statement
A compiler translates a program written in a high-level language into machine language and applies a number of optimizations to the generated code; therefore, compilers play an important role in improving the performance of application programs.

Selected Publication

Xiaoyan Sun  
Ph.D. Information Sciences and Technology  
Pennsylvania State University ’16  
Assistant Professor

Teaching Interests

Areas of Scholarship
Enterprise-level Network/Distributed System Security; Cloud Security; Cyber Situational Awareness; Vehicular Ad hoc Network (VANET); Intelligent Transportation System (ITS).

Scholarship Statement
Cyber security intelligence is a major motivation of my research; it requires support from both advanced security techniques and cyber situation knowledge integration. I develop practical approaches or systems to address real-world cyber security problems.

Selected Publication
Teaching Interests
Design and Analysis of Algorithms; Systems Programming; Computer Networking; Introductory Programming.

Areas of Scholarship
Algorithms; Parallel Computation; Computer Networking; Compression; Encryption; Computational Biology.

Scholarship Statement
Most of my research efforts are related to algorithms. One goal is to bring out the importance of algorithms in the field of computer science. My most recent interest is in computational biology.

Selected Publication

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Teaching Interests
Computer Network; Machine Learning; Mobile Computing; and Algorithm.

Areas of Scholarship
Computer Network; Deep Learning; Indoor Localization; Internet of Things; Mobile Health; and Wireless Systems.

Scholarship Statement
My research focuses on Internet of Things, indoor localization, health sensing, mobile computing, 5G systems, and security and privacy. I am also interested in using machine learning, advanced signal processing, statistical interference, and optimization theory for solving practical systems and fundamental problems.

Selected Publication
Teaching Interests
Software Engineering; Requirements Engineering; Java Programming; Data Structures; and Data Science.

Areas of Scholarship
Requirements Engineering; Software Engineering; Knowledge Engineering; Data Analytics; Human-Computer Interaction.

Scholarship Statement
I research concepts and techniques for modeling and analyzing human perspectives of software systems. My current work focuses on approaches to eliciting new requirements and harvesting new design insights from contextual data using analytical techniques.

Selected Publication
Construction Management is the organization and direction of building projects. Construction Managers oversee the building of roads, bridges, buildings, and industrial facilities upon which we all depend.
CONSTRUCTION MANAGEMENT

Mikael Anderson, P.E.
M.S. Structural Engineering
University of California, Davis ’98
Professor
Chair, Department of Construction Management

Teaching Interests

Areas of Scholarship
Solar Decathlon Project: Design, Build and Test Full-scale Home to be Net Zero, Affordable, Sustainable, Aesthetic, and Water Conservation; Service Learning Projects: Hands-on Learning Projects for the Community.

Scholarship Statement
With a responsibility to prepare students for the work force, my scholarly work is focused on applied research and service learning projects to provide hands-on practical experience.

Selected Publication

CONSTRUCTION MANAGEMENT

Keith A. Bisharat
M.S. Engineering Science
University of California, Berkeley ‘83
Professor

Teaching Interests
Graphics; Construction Documents; Scheduling; Project Management; Construction Materials and Processes; Construction Operations and Methods Analysis.

Areas of Scholarship

Scholarship Statement
My construction graphics text is unique among technical graphics books in that it focuses on how drawings produced by design professionals are translated into discrete processes from which costs can be forecast and a schedule developed.

Selected Publication
CONSTRUCTION MANAGEMENT

Gareth Figgess
MBA Business Administration
California State University, Sacramento ’11
B.S. Civil Engineering, Construction Management
California State University, Sacramento ’06
Assistant Professor

Teaching Interests
Heavy—Civil and General—Engineering Construction Cost-estimating and Management; Construction Surveying and Layout; Engineering Properties of Soils; Engineering Properties of Construction Materials.

Areas of Scholarship
Net-Zero Residential Construction - U.S. Department of Energy Solar Decathlon; Case-based Learning at the Undergraduate Level.

Scholarship Statement
My work has brought students together from several disciplines across campus to build a home that produces more energy than it consumes. Our work will advance the current methods of residential construction to a more energy-efficient standard.

Karen Lee Hansen
Ph.D. Civil Engineering
Stanford University ’93
M.S. Construction Management
Stanford University ’85
Professor

Teaching Interests
C. E. Professional Practice; Sustainable Design and Construction; Project Management; Innovative Project Delivery.

Areas of Scholarship
Civil Engineering Professional Practice; Sustainability and Infrastructure Resilience; Design Build and Integrated Project Delivery.

Scholarship Statement
I am highly motivated to communicate the value of C. E. and C. M. to those outside the profession as a way of elevating the public discussion regarding our decaying infrastructure and of attracting potential students.

Selected Publication
CONSTRUCTION MANAGEMENT

Andrew Mantell
M.S. Civil Engineering
University of California, Berkeley ’84
Assistant Professor

Teaching Interests
Construction Management—Heavy Civil Construction; Bridge Construction; Dewatering.

Areas of Scholarship
Application of recent developments in technology in Construction including: Use of drones in construction; Applications for robotics and artificial intelligence in construction; Micro-tunneling; GPS technology / equipment automation; Construction worker development/training/recruitment to meet growing needs of the construction industry.

Tarek Salama
Ph.D. Building Engineering
Concordia University ’18
Assistant Professor

Teaching Interests
Project Management; Modular Construction; Planning and Scheduling; Cost Estimating; Lean Construction; Building Information Modeling.

Areas of Scholarship
Optimized Planning and Scheduling for Modular and Offsite Construction; BIM and Lean tools for Modular Construction.

Scholarship Statement
With my research and industrial experience, I develop cross-disciplinary research topics in construction management, modular construction, and structural engineering. These cross-disciplinary topics allow students to explore the theoretical background and understand the links among abstract theories and real-world applications.

Selected Publication
Electrical and Electronic Engineers design electrical systems that generate and distribute power for lighting and transportation, as well as electronic systems such as computers, sensors and controls for robots, cell phones, and other communication devices. Electrical and Electronic Engineers build the technology—very large to very small—on which modern civilization depends.
Jean-Pierre R. Bayard  
*Ph.D. Electrical Engineering*  
University of Massachusetts, Amherst ’90  
Professor

**Teaching Interests**  
Circuits; Network Analysis, Electromagnetics  

**Areas of Scholarship**  
Use of technology in teaching and learning; Use of analytics for assessment.  

**Scholarship Statement**  
My research centers around the effective and evidence-based use of technology in teaching and learning: This includes the evaluation of new tools and their impact in the classroom and in other e-learning modalities and developing processes and methods for continuously evaluating the learning that takes place with these tools, while making the appropriate adjustments to increase student success.  

**Selected Publication**  

Fethi Belkhouche  
*Ph.D. Electrical Engineering*  
Tulane University ’05  
Associate Professor  
Chair, Department of Electrical and Electronic Engineering

**Teaching Interests**  
Control systems; Robotics and machine vision; Intelligent Systems.  

**Areas of Scholarship**  
Motion planning; Multi-agent Systems.  

**Scholarship Statement**  
My primary research area includes safe motion planning and multi-agent systems. Applications include robotics and intelligent transportation. The goal is to create intelligent systems for transportation with high levels of reliability and safety.  

**Selected Publications**  
Dennis Dahlquist, P.E.  
M.S. Biomedical Engineering  
California State University, Sacramento ’81  
Full-time Lecturer

Teaching Interests
- Systems Design; Hardware and Software Systems; Circuits; Programmable Logic; Microprocessors and Micro-controllers; Incorporating Technology into Teaching Techniques.

Areas of Scholarship
- Proven and Promising Course Redesign; Professional Engineering; Licensing and Review Courses; Center for Teaching and Learning Mentor to Help Faculty Incorporate Techniques and Technology into Teaching.

Scholarship Statement
I am looking for systems engineering solutions to today’s problems and ways to help the community and industry provide better solutions to the challenging situations faced in today’s world.

Selected Publication
Chancellor’s Office proposal and grant for Proven Course Redesign for Engineering Electric Circuits using MIT’s edX MOOC 6002.x course materials, 2013 to 2014.

Mohammed Eltayeb
Ph.D. Electrical Engineering  
University of Akron ‘14  
Assistant Professor

Teaching Interests
- Communication Systems; Wireless Systems; Digital Signal Processing; Computer Networks.

Areas of Scholarship
- Analysis of Millimeter Wave Systems for 5G; Hybrid Precoding and Channel Estimation; Millimeter Wave Connected Vehicles.

Scholarship Statement
The abundance of bandwidth in the millimeter wave (mmWave) spectrum enables gigabit-per-second data rates for cellular and local area networks. My work revolves in the analysis and design of mmWave systems and their applications in cellular and vehicular networks.

Selected Publication
ELECTRICAL & ELECTRONIC ENGINEERING

Perry L. Heedley
Ph.D. Electrical Engineering
Auburn University ’90
Professor

Teaching Interests
Analog & Mixed-signal Integrated Circuit Design; Graduate and Undergraduate Electronics Education; Pedagogy for On-line and Hybrid Education.

Areas of Scholarship
High-speed Data Converters; Low-jitter Clock Generation and Distribution; Switched-capacitor Circuits for Analog Signal-processing; Low-voltage Analog Design in Nanometer CMOS Processes.

Scholarship Statement
Most of my research focuses on improving high performance analog and mixed-signal integrated circuits for use in computers, communications, and medical equipment. My work has been used to make faster computer networks and better medical instruments.

Selected Publication

ELECTRICAL & ELECTRONIC ENGINEERING

Preetham B. Kumar
Ph.D. Electrical Engineering
Indian Institute of Technology (IIT) Madras, India ’93
Professor

Teaching Interests
Electric Circuits; Electro-magnetics; Communication Systems; Wireless Systems; Digital Signal Processing (DSP); Microwave Engineering.

Areas of Scholarship
Design of RF and Microwave Systems for Wireless Applications; Broadband Antenna Array Design; Microwave Hyperthermia Systems for Adjuvant Cancer Treatment.

Scholarship Statement
The design of high frequency circuits and antennas for wireless systems, and the application of microwave and Radio frequency (RF) energy for cancer therapy by hyperthermia or heat treatment.

Selected Publications
**Milica Markovic**  
*Ph.D. Electrical Engineering*  
University of Colorado, Boulder ‘97  
Professor

**Teaching Interests**  
Electromagnetics; Microwave Engineering; Antennas.

**Areas of Scholarship**  
Modeling of High-efficiency Communication Circuits; Quasi-optical Circuits and Metamaterials.

**Scholarship Statement**  
Microwave circuits and antennas enable communication devices to move around unobstructed by cables. My scholarship revolves around understanding how to make devices more efficient so that the batteries in devices last longer.

**Selected Publication**  

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**Thomas W. Matthews**  
*Ph.D. Electrical Engineering*  
University of California, Davis ‘93  
Professor

**Teaching Interests**  
Analog and Mixed-signal Integrated Circuit (IC) Design; Electronic Circuits; Basic Circuit Analysis.

**Areas of Scholarship**  
Analog and Mixed-signal Integrated Circuit (IC) Design

**Scholarship Statement**  
Simulation and Design techniques for integrated circuits that are of interest to the professional community.

**Selected Publications**  
Teaching Interests

Areas of Scholarship

Scholarship Statement
My main research agenda is to apply rigorous mathematical techniques like global optimization algorithms to automate the design of Analog Subsystems. These analog subsystems find applications in fields ranging from MEMS inertial sensors to hearing-aid devices and other embedded systems.

Selected Publication
Warren D. Smith
Ph.D. Electrical Engineering
University of Oklahoma ’71
Post-doctorate Physiology
University of New Mexico
Medical School ’73
Professor

Teaching Interests
Biomedical Engineering; Digital Signal Processing; Communication Systems.

Areas of Scholarship
Wearable Monitors; Biomedical Device Development; Biomedical Signal Processing.

Scholarship Statement
I want to help people get and stay healthy and lower medical costs through interdisciplinary, collaborative development of biomedical devices.

Selected Publication

Russell Tatro
M.S. Electric and Electronic Engineering
California State University, Sacramento ’00
Full-time Lecturer

Teaching Interests
Electronic Instrumentation; Power Electronics; Control and Embedded Systems; Electro-Optical Communication.

Areas of Scholarship
Consumer Impacts of Renewable Energy Adoption; Renewable Energy Generation; Local (Consumer Based) Energy Storage; the Visibility of Science, Technology, Engineering and Mathematics (STEM) in K-12 Education.

Scholarship Statement
The world is facing a global climate challenge as a result of centuries of the expanding use of fossil fuels. Engineering is needed to discover and implement practical energy alternatives that seek to minimize the climate impacts.

Selected Publication
Tracy Toups
Ph.D. Electrical Engineering
Louisiana State University ‘15
Assistant Professor

Teaching Interests

Areas of Scholarship
Power quality of power systems and microgrids in the presence of non-sinusoidal and/or unbalanced voltages and currents; Advanced metering infrastructure’s adoption of power quality identification and metering; Power quality issues with power electronics and protection devices.

Scholarship Statement
Power quality is an issue with the traditional power system’s adoption of new technology. Investigating century-old power theories and standards will help us understand and create a more efficient and durable power system.

Selected Publication

Suresh Vadhva
Ph.D. Electrical and Computer Engineering
University of New Mexico ‘82
Professor

Teaching Interests
Computer System Design; Computer Architecture and Organization; Digital Systems.

Areas of Scholarship
Smart Grid; Computer System Design and Architecture.

Scholarship Statement
My research focuses on Smart Grid, Computer Architecture and System Design.

Selected Publication
Atousa Yazdani  
Ph.D. Electrical Engineering  
Missouri University of Science and Technology ‘09  
Assistant Professor

Teaching Interests  
Electromechanics; Power Electronics; Power System.

Areas of Scholarship  
Power Electronics and their Application in Power System; Power System Dynamic Analysis; Power Quality.

Scholarship Statement  
I am interested in researching new methods for control and maintenance of the power grid, challenged by intermittent generation. Also, I am willing to work on implementation and optimization of possible solutions to enhance system reliability and quality of energy delivery.

Selected Publication  

Mahyar Zarghami  
Ph.D. Electrical Engineering  
Missouri University of Science and Technology ‘08  
Associate Professor

Teaching Interests  
Power system analysis; FACTS and HVDC; Power system dynamics and stability; Renewable energy systems.

Areas of Scholarship  
Power system dynamics and stability, Applications of FACTS and HVDC in the operation and control of power systems; Integration of renewables in power systems; Modeling and simulation of transmission and distribution systems; Applications of synchronized measurements in wide-area control and protection of power systems.

Scholarship Statement  
I am interested in improving the operation, control, and reliability of electric power systems through implementation of new technologies.

Selected Publication  
“A Wide-Area Loss-Index based method for voltage instability protection,” selected as one of the best conference papers in IEEE PES General Meeting, 2014.
Mechanical engineers design complex systems of machinery and equipment used in transportation, manufacturing and energy production such as aircraft, earthbound vehicles, power generation plants, manufacturing equipment, food production, robotics, biomedical devices, computer systems and components. Mechanical engineers create the devices used in our everyday lives and design the technology that will define the future.

MECHANICAL ENGINEERING

Akihiko Kumagai, Department Chair
Mahmoud Dinar
Ph.D. Mechanical Engineering
Arizona State University ’15
Assistant Professor

Teaching Interests
Product Design and Development; Computer-Aided Design; Manufacturing Processes

Areas of Scholarship
Design Theory and Methodology; AI and Machine Learning for Design and Manufacturing; Additive and Hybrid Manufacturing.

Scholarship Statement
My long-term research vision is to create a Think-to-Make system. It involves creating hybrid ontological and geometrical computational frameworks to understand and aid engineering design and manufacturing, which lies at the intersection of different disciplines: design, manufacturing, cognitive psychology, analytical geometry, and computer science.

Selected Publication

Estelle M. Eke
Ph.D. Aeronautics and Astronautics
Rice University ’85
Professor

Teaching Interests
Controls; Dynamics; Programming with Matlab and Simulink.

Areas of Scholarship
Controls; Dynamics; Modeling of Mechatronics Systems.

Scholarship Statement
Use of computer simulations and hands-on approaches to design control systems that satisfy some desired outcome are essential skills for engineers. For example, robots apply principles of controls in performing tasks that are hazardous to humans.

Selected Publication
Jose J. Granda  
Ph.D. Mechanical Engineering  
University of California, Davis ’82  
Professor

Teaching Interests
Modeling and Simulation of Mechatronics and Control Systems; Dynamic Finite Elements Analysis of Rigid and Flexible Multi-body Systems; Vehicle Dynamics and Design (Ground and Space Vehicles).

Areas of Scholarship
Computer Simulation Methods to assist Engineers and Scientists; Dynamic Systems Design and Research; 3D Computer Models using Solid Modeling and Finite Elements; Bond Graph Modeling Technique as applied to Mechatronics and Control Systems.

Scholarship Statement
Computer models and simulations provide engineers and scientists with tools to understand complex systems before anything is built.

Selected Publication

Sue L. Holl  
Ph.D. Materials Science & Engineering  
University of California, Berkeley ‘81  
Professor

Teaching Interests
Materials Science and Engineering; Electronic Materials.

Areas of Scholarship
Wafer Bonding of Semiconductor Materials.

Scholarship Statement
Wafer bonding allows production of smaller, faster integrated circuit devices for use in many consumer applications.

Selected Publication
**Patrick Homen**

M.S. M.E. Candidate California State University, Sacramento ’16
B.S. Biological Sciences, University of California, Davis ’79
Full-time Lecturer

- **Teaching Interests**
  - Material Science; Engineering Mechanics; Composite Materials.
  - Named outstanding teacher by the College of Engineering and Computer Science in 2012 for his role advising Tau Beta Pi, the engineering honor society; Named their National Outstanding Advisor in 2009. [www.csus.edu/sacstatenews/facultyexcellence/homen.html](http://www.csus.edu/sacstatenews/facultyexcellence/homen.html)

- **Areas of Scholarship**
  - Biomedical Engineering; Mechanical Engineering; Composite Materials.

- **Scholarship Statement**
  - My scholarship curricula and research are focused on sustainability issues in society.

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**Akihiko Kumagai**

Ph.D. Mechanical Engineering
University of Wisconsin, Milwaukee ‘93
Professor
Chair, Department of Mechanical Engineering

- **Teaching Interests**
  - Manufacturing Processes; Product Development; Industrial Controls and Automation.

- **Areas of Scholarship**
  - Manufacturing; Robotics; Automation; Mechatronics; Medical devices.

- **Scholarship Statement**
  - My scholarly work focuses on designing and developing mechanical systems for applications such as manufacturing, medical devices, miniature mechanisms, and space exploration.

- **Selected Publication**
Teaching Interests
Thermodynamics and Thermal-Fluid Systems; Sustainable Energy Systems (Bioenergy, Solar Thermal, Geothermal, Energy Storage, etc.).

Areas of Scholarship
Food and Brewery Process Technology and Packaging; Sustainable Energy and Energy Efficiency; Heat and Fluid Flow.

Scholarship Statement
Current externally-funded research projects include appliance energy efficiency testing for the California Energy Commission and computational analysis of sprinter aerodynamics.

Selected Publication
Marcus Romani
M.S. Mechanical Engineering
California State University, Sacramento ‘05
Full-time Lecturer

Teaching Interests
 HVAC Analaysis and Design; Heat Transfer; Solar Thermal Systems.

Areas of Scholarship

Kenneth Sprott
Ph.D. Mechanical Engineering
University of California, Davis ‘00
Associate Professor

Teaching Interests
 Mechanical and Machine Design; Dynamics; Mechatronics; Tolerance Analysis; Computer Aided Design.

Areas of Scholarship
 Manufacturing Technology.

Scholarship Statement
 My research is in the area of generating new methods for converting CAD geometry into five-axis CNC tool paths. My research should make it easier to connect a desired surface geometry to the actual kinematics of the machine tool that will create the surface. I am also interested in finding new ways to interpret/teach tolerance analysis for product design.

Selected Publication
Yong S. Suh  
Ph.D. Mechanical Engineering  
Rensselaer Polytechnic Institute ‘95  
Professor

Teaching Interests
Computer-Aided Design; Computer-Aided Manufacturing; Engineering Graphics; Machine Design; Design Theory and Methodology; Product Design.

Areas of Scholarship
CAD/CAM Product Design; Computer-aided Design Automation, Shape and Geometric Modeling; Simulations; Computer graphics applications.

Scholarship Statement
Computer integrated design and manufacturing enhances the creativity of quality products, decreasing the costs of the product life-cycle and impact on the environment.

Selected Publication

Hong-Yue (Ray) Tang  
Ph.D. Mechanical and Aeronautical Engineering ’09  
University of California, Davis  
Assistant Professor

Teaching Interests
Manufacturing; Control Systems; Intelligent Systems; and Mechatronics.

Areas of Scholarship
Multi-physics modeling of complex systems, Energy systems, Sustainable technologies, and Manufacturing.

Scholarship Statement
Effective use of resources is important. As engineers, we turn design ideas into reality to improve quality of life. My work focuses on design, manufacturing, and other related area to enable a sustainable future.

Selected Publication
Teaching Interests

Areas of Scholarship

Scholarship Statement
My research is focused on developing ultra-high performance materials to be implemented for extreme applications such as vehicle armor, aerospace, and oil and gas exploration. These materials can save lives and conserve energy in the long term.

Selected Publication
Rustin Vogt  
*Ph.D. Material Science Engineering*  
University of California, Davis ‘10  
Assistant Professor

**Teaching Interests**  
Product Design and Manufacturing; Manufacturing Processes; Dynamics; Materials Science; Materials Selection in Design.

**Areas of Scholarship**  
Experimental Characterization of Engineering Materials; Mechanical Behavior, Strain Rate and Fatigue; Composite Materials; Design for Manufacturability.

**Scholarship Statement**  
My research focus is on characterization of composite materials for use in structural and high temperature applications, and design for manufacturability in the context of material selection in design.

**Selected Publication**  

Farshid Zabihian  
*Ph.D. Mechanical Engineering*  
Ryerson University ‘11  
Assistant Professor

**Teaching Interests**  
Thermodynamics; Power Plant Engineering; Renewable Energy Systems; Fluid Mechanics; System Design (Capstone).

**Areas of Scholarship**  
Fuel Cells; Renewable Energy Systems (Ocean, Geothermal, Wind, etc.); Engineering Pedagogy.

**Scholarship Statement**  
My research focus is on more sustainable electricity generation including renewable energy resources and advanced/improved fossil fuel power plants through experimental and numerical approaches.

**Selected Publication**  
Dongmei Zhou  
Ph.D. Mechanical Engineering  
University of Texas, Austin ’05  
Associate Professor

Teaching Interests  

Areas of Scholarship  
Computational fluid dynamics, Turbulent flow, Drag reduction control, Turbomachinery, Renewable energy (wind, ocean, solar, and fuel cell), Heat transfer, Electronic cooling, HVAC.

Scholarship Statement  
My research promotes renewable energy for clean electricity generation; drag-controlled vehicles, that burn less gasoline; and effective cooling of electronics so computers can run faster.

Selected Publication  
PART TIME FACULTY

CIVIL ENGINEERING
Alderete, David J.
Berry, Ron
Burns, Robert
Cvijanovic, Vojislav
Dosen, David
Ellis, Douglas
Flora, Kevin
German, John A.
Granicher, Tod
Hatch, Tyler
Jin, Yujie
Kartoum, Allaoua
Kim, Changmo
Levine, Neal F.
Lim, Seungwook (David)
Mahanalati, Reza
Meyer, Scott E.
Monzon, Eric
Ouchida, Peter K.
Raghavendrachar, Madhwesh
Reggad, Naima
Safi, Samsor
Salveson, Matthew
Sanati, Laurence
Shami, Michael
Silva, Aaron
Wright, Alexander

COMPUTER SCIENCE
Applebaum, Kathleen
Biel, Ruthann
Buckley, Robert
Chen, Yu
Chidella, Jagannadha
Cook, Devin
Faroughi, Gita
Lavender, Brian
Lee, Mary Jane
Mitchell, William
Mukarram, Abida
Nguyen, Doan
Posnett, Daryl
Radinsky, Anne-Louise
Srivatsa, Sankar
Tajlil, Holly
Thompson, Kent
White, Ben

CONSTRUCTION MANAGEMENT
Amend, Matthew
Baker, John

PART TIME FACULTY
Buckley, Patrick
Bushman, Carrie
Della Monica, Adam
Haskell, John
Hofmann, Quinn
Leon, Adam
Meier, Henry
Shope, Mark
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ELECTRICAL & ELECTRONIC ENGINEERING
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Carmi, Eric D
Cloninger, Anna Rose
Cottle, James
Haynie, Carl
Khazane, Nitish
Kleeburg, Travis
Levin, Neal
Martin, Nicholas
Mearns, James
Najafi, Zahra
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MECHANICAL ENGINEERING
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Band, Ronindranath
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Chen, Wenying
Cho, Greg
Fernandez, Steven
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Our hope is that this book will help students guide their educational careers, that it will promote interdisciplinary discussions among the faculty, and that it will help foster productive connections among research, workforce, and industry.

This book has come about through the efforts of the College of Engineering and Computer Science’s faculty—for the content; of Dean Lorenzo M. Smith—for the inspiration and his aspiration for a strong engineering community; of Denise Anderson—for the project management; of Deborah Frost—for the graphic design; of James Ster and John Jones—for the photographs.