

ALUMNI

Connections

Fall 2011

Engineering Health Care

The work of industrial engineers in health care settings has traditionally been limited to management of operations and workflow logistics, helping hospitals and clinics to operate more efficiently and effectively, and having an indirect influence on enhanced client treatment. Now, an innovative approach by two Kansas State University engineering faculty is pushing these boundaries and may lead to developments that have a more direct effect on patient care.

Using system dynamics, agent-based simulation and evolutionary games, Industrial and Manufacturing Systems Engineering professor David Ben-Arieh and associate professor Chih-Hang (John) Wu have developed a method to model the progression of different sepsis episodes through the human body at a cellular level. By modeling the human immune and inflammatory responses at an aggregate level using advanced parallel simulation mechanisms, the aim of this research is to develop an assessment tool that medical staff can use to predict the outcomes or risk of a patient during an episode of care by comparing a series of simulated prognostic indicators with the actual patient's status.

Sepsis is a potentially serious medical condition in which the bloodstream is overwhelmed by bacteria. In the United States there are approximately 750,000 new sepsis cases each year with mortality rates between 20%-80% within 30 days, making it the second leading cause of death among non-coronary patients. In addition to its heavy toll on patients, sepsis is a burden on the nation's health care system. Annually, it accounts from as many as 25% of intensive

care unit (ICU) bed utilization and \$1.7 billion in treatment costs.

According to Wu, the team's method begins with modeling the initial bacterial infection or tissue damages, the human immune responses, and antibody effects including the resistances of antibody agents over time using sophisticated stochastic evolutionary dynamics games.

"Interestingly, our preliminary research results have shown that our agent-based simulators based on purely human immune responses can produce consistent yet more robust results compared to the existing analytical models based on system dynamics approaches," he said. "Additionally, they are compatible with clinical trial results found in existing publications."

The current research is being conducted in collaboration with the University of Kansas Medical School Hospital, which has teams responsible for clinical trials and blood cell culturing to confirm the mathematical models at both the laboratory and clinical levels.

"We understand system dynamics. They know biology," said Ben-Arieh. "Together we have the opportunity to develop a support tool for physicians to use when making care decisions. We believe such a tool would enable them to make more effective and efficient treatment decisions, producing better outcomes for both patients and the health care system."

According to Ben-Arieh this would prove especially useful for small hospitals which are

Continued on page 3

THIS ISSUE

- 3 Engineering Bill
- 4 Graduation
- 5 Alumni News
- 7 FRC Grant

Ward Receives IMSE Professional Progress Award

Beth (Forge) Ward (B.S.I.E. 1993) was among eight other Kansas State University engineering alumni to receive the Professional Progress Award during the 2011 Seaton Society Celebration. The Professional Progress Award recognizes successful alumni within the first 20 years of their professional careers.

"It's a privilege to receive this award," Ward said. "I've been fortunate in my career to be exposed to a variety of supply chain facets within industry, which has given me the opportunity to grow both personally and professionally." Her advice to IMSE students and new graduates just getting started in their careers is to keep learning, be open to new experiences, and stay true to your values.

"Your values are what will guide you and

Continued on page 6



Beth Ward with College of Engineering Dean John English

2010-2011 Advisory Council

Brian Brooks
Lockheed Martin Aeronautics
Ft. Worth, Tex.

Deandra Cassone, Ph.D.
Sprint Nextel, Overland Park, Kan.

Robert C. Copple, FACHE, PE
Alegent Health Immanuel Medical Center
Omaha, Neb.

Laura Cranmer
Celestica, Loveland, Col.

Dave Dohrmann
D.A.D. Manufacturing, Inc.
Hiawatha, Iowa

E. Mark Evans
Siemens AG, Hutchinson, KS

Doug Gish, Past Chair
Deloitte LLP, Overland Park, Kan.

Kyle Grabill, Chair
Garmin International, Olathe, Kan.

Jeffrey Hopkins
Adams-Gabbert & Associates, LLC
De Soto, Kan.

Amy Martens, P.E.
Blue Cross Blue Shield of Kansas
Topeka, Kan.

Ryan McGuire
J.B. Hunt Transport, Inc., Lowell, Ark.

Mark Miller
Accenture, Overland Park, Kan.

Timothy Pottorff
Zurich Services Corporation
Schaumburg, Ill.

Anita Ranhotra
Hallmark Cards, Inc., Kansas City, Mo.

Justin Salmans
Spirit AeroSystems, Inc., Wichita, Kan.

Julie Vick, Chair Elect
Procter & Gamble, Kansas City, Kan.

Beth Ward
Hallmark Cards, Inc., Kansas City, Mo.

Ken Ward, Vice Chair Elect
Centres Consulting, Westwood, Kan.

Keith White
Keith White Analytics
Las Vegas, Nev.

Department Matters

A note from IMSE department head Brad Kramer



Great things are happening in Manhattan! Wow, what a year.

First, there are a few new faces roaming our department halls. Kimberly Douglas-Mankin stepped out of her role as the leader of our Women in Engineering and Science Program

(WESP) to resume her role as a full-time faculty member last fall. And a few months later we welcomed Jessica Heier Stamm back to the department. Jessica earned her B.S.I.E. from K-State and completed her Ph.D. at Georgia Tech in time to start the spring semester with us.

Unfortunately, though, we also have to report losses to the department. Dr. Mike Harnett, after having served in our department since 1988, decided to retire. "Iron Mike," as the Fort Leavenworth students liked to call him, started up our current MSOR program, led the department as head for five years, and taught just about every undergraduate in our program since 1993. He will be missed. You can read more about these faculty updates on page 7.

This is an important year for us. Our undergraduate program is up for accreditation review once again. Every six years ABET, the accrediting body, reviews the program. The visit is an audit similar to those you may have undergone for ISO certification. We prepare a self-study document that describes our program and all the processes to assure that our graduates are well-prepared. We work with the ABET team to answer questions they may have on the report ahead of a three day visit to review the program. They look at course materials, audit the transcripts of random graduates (personal information redacted), interview faculty and staff, and talk to a lot of students.

The team also talks to the Dean and Presi-

dent, and with faculty from supporting departments. They review our facilities and equipment and audit our financial transactions. It's pretty thorough. Our visit is scheduled for October 23 - 25. There are follow-up reports after our visit and a final decision on accreditation status will be made July 2012. I am confident that our faculty team has put together a great self-study report and that our visit will go well.

As you can see by our lead article, we are making great strides to improve health care! I am pleased to report that Drs. Ben-Arieh and Wu gained approval from the university to form the Health Care Operations Resource Center. This Center formalizes our efforts to conduct advanced research that can lead to significant improvements in our health care systems and to provide student-led project assistance to health care operations across our state.

In addition to this newsletter, you may want to look at our annual report. It's available on the website or you can contact the department for a copy. The report's intended audience is primarily other industrial faculty members and secondarily prospective graduate students. It is intended to summarize our research activities in a way that helps build the department's reputation and entice outstanding graduate students to apply to our programs.

One of our goals this year is to increase our connections with our alumni. To that end, Tina Long has joined us to produce vehicles like this newsletter, our website and alumni events as well as lead our social media program. You can find us on Facebook, Linked-In and Twitter. Since communications isn't a one-way street, we also want to hear from you with news you'd like to share with the rest of our family.

Keep in touch.

A handwritten signature in black ink that reads "Bradley A. Kramer". The signature is written in a cursive style with a large, looped 'B' and 'K'.

We Want YOUR News!

Let us know what you're up to! We're interested in news on new jobs, promotions, retirements - really anything career related - for sharing with fellow IMSE alums. Please email your updates to imse@ksu.edu or mail to IMSE Dept., 2037 Durland Hall, Kansas State University, Manhattan, KS 66506. We plan to publish updates in Alumni Connections newsletter twice per year.

generally not well equipped to deal with septic patients, providing the time necessary to transport the patient to a larger facility for care. Or, it could help an ICU make best use of its resources to focus on patients who are at a higher risk of developing septic shock, a condition that can result in multiple organ dysfunction.

While Ben-Arieh and Wu's work on sepsis research is of itself remarkable, the real significance is the exciting opportunities for expanded industrial engineering applications on the health care industry, according to Bradley Kramer, IMSE department head and professor. "Interdisciplinary research is always challenging," he said. "Successful ventures, such as the sepsis research, could possibly open the door to additional partnerships for research on other diseases leading potentially to breakthroughs that help hospitals and clinics operate more efficiently and effectively, but could help save lives."

"Health care is a growing focus within the industrial engineering field," Kramer concluded. "Through their research, Drs. Ben-Arieh and Wu are charting a new and socially significant course for future researchers to pursue."

Health Care Operations Resource Center Established

The Industrial and Manufacturing Systems Engineering's health care initiative has achieved university Center status, providing the opportunity for better recognition and more successful cooperation with health care providers.

"Center designation status gives clients and potential research sponsors an indication of university commitment to this effort and provides project stability and permanency for our efforts," said David Ben-Arieh, IMSE professor who along with associate professor John Wu is leading the effort. "With this status we hope to also engage faculty from across the university to expand the scope and reach of projects, creating advances in numerous areas of research and the opportunity for new funding sources." With time and sustainable funding levels Ben-Arieh and Wu hope to seek Regents Center designation.

Since its focus on health care operations began in 2007, the IMSE department has completed 14 projects with clinics and hospitals, engaging more than 40 undergraduate and graduate students in the work. The projects have ranged from facility planning and optimization of medical supply ordering for small rural hospitals to emergency room workflow improvements and information systems design for large urban medical centers. As part

of this effort the department has also hosted four workshops for hospital and clinic administrators and supervisors, and established an advisory council to guide efforts and provide recommendations for future growth.

According to Wu, applying industrial engineering approaches to untraditional projects, such as sepsis and other similar efforts, is a primary reason why the Health Care Operations Resource Center is needed. "Relating our efforts to an engineering department actually creates barriers when researchers, medical professionals, and administrators are first introduced to our services," he said. "We believe the center designation will allow us to overcome this difficulty and open doors to new collaborations."



Students confer with Drs. Ben-Arieh and Wu on a project for Children's Mercy Hospital.

The Center will continue to provide opportunities for students to gain valuable hands-on experience by conducting projects to improve health care operations. The Center will also be engaged in research that leads to advances in Health Care Operations industry-wide.

"Today, more than ever, there is a recognition that our health care industry needs to operate more efficiently to reduce costs, provide consistently high quality of care, and maximize patient satisfaction," Wu said. "The purpose of K-State's Health Care Operations Resource Center is to help do just that."

Wanted: More Engineers

Kansas State University will share in funding aimed at increasing the number of engineers in the state.

Approved by the Kansas Legislature and signed into law by Governor Sam Brownback, the measure allocates \$10.5 million annually starting in 2013 to enhance and expand engineering education at K-State, The University of Kansas, and Wichita State University. The goal of the legislation is to boost the number of engineering graduates from the three schools by 50 percent to 1,365 in 2021.

K-State's would be eligible for up to \$3.5 million annually and is required to match

this state aid with private dollars, according to Bradley Kramer, industrial and manufacturing systems engineering department head.

"This is both an opportunity and a challenge for K-State's College of Engineering," Kramer said. "Not only do we need to step up our donor support, but need to develop creative ways to recruit and retain more engineering students."

State leaders view the legislation part of a strategy to grow the state's economy and create jobs. Testimony presented to the legislature attribute one-third of Kansas' payroll and two-thirds of exports to

engineering-intensive industries. Business executives attributed a lack of engineers to difficulties expanding their companies in the state.

"We know the demand for K-State engineers is strong, we've seen it with our graduates," Kramer said. "This initiative is an exciting opportunity for the IMSE department to grow and improve upon our program in order to produce graduates that can help our state and local communities compete in an ever increasing global economy."

Senior Receives Dean of Student Life Award

Relationships matter. While not necessarily learned in the classroom, for Phillip Harner, a May 2011 industrial and manufacturing systems engineering graduate, it's a lesson he's drawn on often while a student at K-State.

"You'll never regret the time spent building relationships with those around you," Harner said. "And, you never know where they might take you."

While at K-State Harner was active on campus serving as a K-State Proud co-chair, member of the K-State Student Foundation, Wildcat Week of Welcome coordinator, orientation leader and K-State scholars tour guide, and legislative assistant in the Governmental Relations office. He also took time for service to the community including spending four summers teaching English in Budapest, Hungary and developing Philanthrocakes, a monthly event sponsored by the FarmHouse Fraternity that raises funds for community organizations.

For his leadership on campus, Harner was presented with the Dean of Student Life Outstanding Graduating Senior Award. Presented annually, the award recognizes the recipients' significant contributions made to student life at K-State.

"What my leadership experiences have taught me is it's important to work hard, treat people well, and make the most of any

opportunity," he said. "When I let myself start chasing titles or recognition the quality of what I do diminishes significantly and I put more emphasis on myself and what I want than those around me."

Harner credits his parents, Milly and Joe, department head and professor with K-State's Biological and Agricultural Engineering, for his leadership philosophy. He also believes industrial engineers are natural leaders. "IE's know how to effectively work on teams and are problem solvers, which are key leadership attributes."

Following graduation, Harner began Lockheed Martin's Operation leadership Development Program, working on the F-35 Joint Strike Fighter Program. His future plans include graduate school and maintaining his many K-State connections via social media and old-fashioned phone conversations.



Phillip Harner

Student Honored

Allan Tillman is the recipient of a 2011-2012 Material Handling Education Foundation Seizmic Honor Scholarship. He is one of 29 students nationwide to receive an award from the foundation. The scholarship recognizes superior academic achievements.

Tillman, a senior, is in the IMSE department's concurrent bachelor's and master's program. He is the department's 31st student to receive an award from the Material Handling Education Foundation.

A K-State honors list student, Tillman received the Jacob Smaltz Senior Academic Achievement Award and scholarship from the department of industrial and manufacturing systems engineering in May 2011. He is a 2001 Manhattan High School graduate and the son of Frank and Barbara Tillman, Manhattan.

The Material Handling Education Foundation Inc. is dedicated to encouraging and supporting material handling education. Since its establishment in 1976, the foundation has awarded more than \$2 million in awards to graduate and undergraduate students, as well as to academicians and their institutions.

2011-2012 IIE Officers Named

The K-State Institute of Industrial Engineers (IIE) chapter is responsible for a number of initiatives that promote the industrial engineering profession and the university's industrial and manufacturing systems engineering department. Among the activities IIE plans for all IMSE students are Open House, departmental assemblies, peer advising sessions, and intramurals. The organization also plans member-only activities such as tailgates, ice cream socials, and the regional paper conference.



2011-2012 K-State IIE officers (L/R): Front row: Sarah Pavlu, chapter development co-chair; Jordyn Storey, secretary; Courtney Taylor, intramurals co-chair; Ashley James, historian. Back row: Ali Kaan Ozkilig, vice president; Josh Dohrmann, chapter development co-chair; Andrew Waldman, Open House co-chair; Tom Bolton, Open House co-chair; Brett Murry, treasurer; Brandon Mais, president; Mark Prieb, intramurals co-chair.

Open House 2011

Despite the rain that moved the College of Engineering Open House parade inside for the first time in recent memory, the event provided a wonderful opportunity for IMSE students to show off real life applications of what they learned in the classroom.

Two of the six Open House awards including the Limited Class display by the ergonomics team and the Open Class/Innovation display by MSDA were awarded to IMSE. The department placed second in the overall department competition.

IMSE senior Ashley Dohrmann was crowned St. Patricia. Five of the 28 Knights of St. Patrick, a recognition of outstanding seniors, were IMSE students including Carrie Beyer, Ashley Dohrmann, Samantha Marin, Lauren Phillips, and Ed Zuiss. Additionally, Zuiss was named the Outstanding Executive and Courtney Taylor the Outstanding Region Head for the Engineering Ambassadors. Four IMSE students were initiated into the engineering honorary society, Tau Beta Pi. They are Jordan Bever, Brandon Mais, Sarah Pavlu, and Andrew Waldman.

IMSE students continued to provide outstanding leadership for the event with five of the 21 members coming from the department.

Those students were James Bailey, Brandon Gumm, John Harrington, MaKayla Maurath, and Lauren Phillips.

IMSE juniors Jordan Bever and Lauren Cody led the department's Open House efforts with Malgorzata Rys and John Wu serving as faculty advisors.



IMSE senior Ashley Dohrmann was crowned St. Patricia. She is pictured with St. Pat Leonel Hernandez.

Congratulations Graduates!

The Industrial and Manufacturing Systems Engineering department is proud to announce its spring 2011 graduates. In total, 29 students received degrees including 17 bachelor of science, four BS/MS, six masters, and two doctoral.

BS Industrial Engineering

Jeffrey Campbell, Wichita
Ramiro Carreon, Garden City
Matthew Detrixhe, Concordia
Ashley Dohrmann, Anamosa, IA
Brandon Gumm, Concordia
Phillip Harner, St. George
Mark Haynes, Andover
Adam Maxwell, Wichita
Daniel Nottingham, Ozawkie
Kevin Patrick, Hutchinson
Lauren Phillips, Less Summit, MO
Obair Siddiqui, Manama, Bahrain
Jason Spidle, Hesston
Amanda Tadros, Lenexa
Michael Wegener, Overland Park
Tyler Whetstone, Overland Park

Edward Zuiss, Andover

BS/MS Industrial Engineering

Carrie Beyer, Lenexa
Jeff Pavelka, Manhattan
Shaun Smith, Manhattan
Johana Wiesner, Ellis

Graduate Degrees

Sandra Hatch (MSOR), Ft. Riley
Nathan Hix (MEM), Miami, Fla.
Sameera Kalidindi (MSIE), Visakhapatnam, India
Gitae Kim (Ph.D.), Seoul, South Korea
Michael Needham (MSOR), Springfield, VA
Patrick Parker (MSIE), Manhattan
Na Qin, (Ph.D.) Dalian Liaoning, China
Andrea Schneider Nuss (MSIE), Tribune

Students Recognized

The IMSE department honored academic achievement and student involvement at its spring semester awards banquet. In addition to the IMSE department, awards were presented by the Institute of Industrial Engineers (IIE). Awards included scholarships provided by the department or presenting organization. Students earning honors include:

Jordan Bever, Hutchinson, Outstanding IMSE Junior/George L. Dickey Memorial Scholarship and IIE Alpha Hardcharger award.

Lauren Cody, Overland Park, IIE Beta Hardcharger award.

Matthew James, Manhattan, Lynn Bussey Memorial Graduate award

Sarah Pavlu, Outstanding IMSE Sophomore award

Valerie Rito, Liberal, Outstanding IMSE Freshman award

Brant Roney, Andover, IIE Gamma Hardcharger award

Alan Tillman, Manhattan, Jacob Smaltz Senior Academic Achievement award

Tyler Whetstone, Overland Park, Outstanding IMSE Senior.

MEM Graduate Named Alumni Fellow

Allan D. Sicat, a graduate of the IMSE's Masters Engineering Management (MEM) program, was one of 12 distinguished Kansas State University graduates honored as 2011 Alumni Fellows. Sicat is the first distance education graduate to receive the honor.

Sicat started the MEM program while a military officer with the United States Army. He was attracted to the program as he thought it would be a great way to earn a graduate degree while working full time. That flexibility proved especially helpful when in 2001 Sicat was deployed to Egypt following the September 11 terrorist attacks. After taking a semester off, Sicat returned and graduated in May 2003.

"I knew a master's degree would someday help me make the transition from military to civilian life," Sicat said. "The MEM degree seemed the perfect mix of engineering and business that would position me for the next step in my career."



Allan Sicat

After completing his military service, Sicat joined General Electric and then moved to Booz Allen Hamilton where he was consultant to the Department of Defense.

In 2007 he teamed up with a fellow West Point graduate to become co-owner of Carousel Designs, a leading designer, manufacturer and distributor of distinctive baby bedding based in Douglasville, Ga. As president, Sicat is responsible for the profitability and overall growth of the company.

Sicat encourages those who are pursuing or considering distance degrees to stick with it. "Even if you need to take a break because of work or family obligations, you can still finish your degree," he said.

"The instructors at K-State are great. They understand this. You just need to keep plugging along, stay disciplined, and get it done."

You can learn more about Carosel Designs at babybedding.com.

PPA Award continued from cover

sustain you through the stress and strain of work and family," she said. "If you are clear on what your values are, decision making becomes clearer and you will establish yourself as an authentic leader."

Ward is currently Retail Operations Vice President at Hallmark Cards, Inc., where she is responsible for the operational planning, execution and servicing of all programs at the retail level for Wal-Mart. She joined Hallmark in 1996 as an Industrial Engineer at the Liberty Distribution Center and has held positions of increasing accountability in Operations. Ward also supported William Arthur, Inc., a wholly-owned Hallmark subsidiary, in various capacities, and worked as an Industrial Engineer at the JCPenney Logistics Center. In addition to her B.S. degree, Ward holds an M.S. Engineering Management from the University of Kansas.

Ward is a member of the advisory councils for the KU Supply Chain Management program and the K-State Industrial Engineering program. In recent years, she held a board seat with the Central Exchange and is former chair of the United Way Young Leaders Society. She was honored in the 2009 "Forty Under 40" class by Ingram's magazine, and as 2008 "Woman to Watch" during the annual Central Exchange Women of the Year celebration.

From IE Degree to Launch Pad

Natasha Del Rosario, a 2008 Kansas State University IMSE graduate, is an Air Force First Lieutenant and part of an elite team that's implementing the next generation of early warning missile detection satellites, greatly improving national security for years to come.

On May 7, 2011 GEO-1, the first of the U.S. military's Space Based Infrared System (SBIRS), was launched from Cape Canaveral, Fla., with Del Rosario looking on like a proud parent.

"It was a momentous day," she said. "While the project itself was 17 years in the making, for me it was the culmination of two years of hard work that finally paid off with a successful launch. It was a thrilling, amazing feeling."

The SBIRS program is viewed as one of the nation's highest priority space security programs as it is expected to provide global, constant infrared surveillance that will accomplish a number of national defense

requirements. GEO-1 is the first to be launched as part of the SBIRS program. It is expected to provide the military with advanced warning of potential incoming threats while they are on the battlefield.

Del Rosario, from Leawood, Kan., came to K-State on a four year Air Force ROTC scholarship. Following graduation, she began work in the Space and Missile Systems Center at Los Angeles Air Force Base where her first major assignment was to manage three of the GEO-1's space vehicle sub-systems worth \$15 million dollars.

Unlike many of her co-workers, Del Rosario says she's actually using her degree in her work.

"Most wish they had some financial and systems engineering experience," she said. "Industrial engineering is really the best of both worlds. It's like having a business degree with an engineering title."

Del Rosario is doing her part to promote the

value of IEs in the armed forces. In March, she was named 2010 Junior Officer of the Year for her base. She's also received a new position in January of this year. As vehicle manager for GEO-2, Del Rosario is responsible for the assembly, test, and launch operations of this \$3 billion satellite slated for launch in 2012.

"Essentially, I'm taking what I did on GEO-1 to the next level," she said. "There are a lot of players involved and I need to stay on top of everything. Not only am I responsible for monitoring the project and approving any changes to labor, resources, and schedule. I also need to be able to justify those changes to my Air Force leadership."

Though a demanding job, Del Rosario loves her work as an IE.

"It's an exciting time to be part of the SBIRS program because we are making history."

To see Del Rosario in action, you can view the launch of GEO-1 on YouTube - search "GEO 1 launch".

Harnett Retires

In May, Dr. R. Michael Harnett retired after 23 years of professional teaching, research, and service at Kansas State University in the areas of operations research and industrial engineering.

Throughout his career, Dr. Harnett served in a variety of academic leadership positions including five years as Associate Dean of Engineering at Louisiana Tech and five years as the Industrial Engineering department head at K-State. Dr. Harnett also led the development of a program at K-State to deliver the Master of Science degree in Operations Research to both military and civilian personnel stationed at Fort Leavenworth. In recognition of his leadership and support for this program, Dr. Harnett received the Commander's Award for Public Service from the Army TRADOC Analysis Command in 1993. He oversaw this important program for more than 20 years.

In the classroom Harnett was known for being well prepared, highly organized, and very thorough. His students respected him and said he was tough, but fair. He was also

an outstanding advisor, counseling countless undergraduate and graduate students as well as leading Alpha Pi Mu, the Industrial Engineering Honor Society, for more than 15 years. His dedication to helping students succeed is reflected in his own words, "What is most rewarding about teaching is showing people that they can achieve more than they think they can."

Harnett received his B.S. in Mathematics (1968) from Louisiana Tech, M.S. in Operations Research (1972), and Ph.D. in Industrial and Systems Engineering (1974) from the University of Alabama in Huntsville. Prior to joining K-State, Harnett served on the faculty at Clemson University and at Louisiana Tech University. Before beginning his teaching career he worked for seven years in industry, including stints with the Northrop Space Laboratory and U.S. Army SAFEGUARD Systems Command.

Well wishes can be sent in care of the IMSE Dept., 2037 Durland Hall, Manhattan, KS 66506 or imse@k-state.edu.

Familiar Faces Join IMSE Faculty

The Industrial and Manufacturing Systems Engineering department has welcomed two faculty members to full-time department responsibilities.

Kimberly Douglas-Mankin returned to full-time teaching duties in fall 2010. A member of the IMSE department since 2003, Douglas-Mankin's research focuses on development and assessment of effective strategies for K-12 outreach, recruitment and retention of engineering and science students, particularly those who are under-served and under-represented in these fields. Her teaching is in the areas of management systems engineering, quality engineering, performance assessment, engineering economics and transportation engineering. She was the recipient of the 2008 Clair A. Mauch Steel Ring Advisor of the Year award and her efforts have been supported by some \$3.7 million in grant funds including a \$1.6 million National Science Foundation (NSF) award. A licensed professional engineer, Douglas-Mankin received her B.S. and M.S. degrees from Oklahoma State University and her Ph.D. from Arizona State University.

K-State IMSE alumna Jessica Heier Stamm (2004) joined the faculty in December 2010, teaching Operations Research II and Industrial Logistics Engineering during the spring semester. Her research is focused on application of operations research and industrial engineering techniques to humanitarian relief and public health efforts. She is specifically interested in design and analysis of systems with decentralized decision makers and development of methods that lead to decentralized solutions that approximate the performance of centrally optimal decision making. Her work also involves characterizing existing practices and decision-making process in humanitarian supply chains. Heier Stamm was recognized by the Engineers Week Foundation as a 2008 New Face of Engineering honoree, and was the recipient of the Institute of Industrial Engineers IIE Gilbreth Memorial Fellowship and NSF Graduate Research Fellowship. She received her Ph.D. from the Georgia Institute of Technology.

"We're fortunate to have Kimberly and Jessica on the IMSE faculty," said Bradley Kramer, department head. "They have brought new perspectives and energy to the department. I look forward to their contributions both in the classroom and through their research efforts."

Grant to Study Concrete Railway Ties

As interest in high-speed railway system grow in cities and states across the United States, a team of Kansas State University professors including Industrial and Manufacturing Systems Engineering associate professor Chih-Hang (John) Wu is working to make future trips safer.

Wu along with K-State professors Bob Peterman, civil engineering, and Terry Beck, mechanical and nuclear engineering, as well as Pelle Duong, chief engineer at CXT Concrete have received \$1.2 million from the Federal Railroad Administration, K-State Transportation Center and CSX Concrete Ties to study prestressed railroad ties.

Prestressed concrete railroad ties are an essential component for high speed railway lines as wooden cross ties are too flexible. For these ties to be effective, prestressing forces must be applied at a considerable distance before the rail load is applied. This is called the transfer length. To resist the heavy impacts the concrete ties utilize about 20 steel wires, each stressed to around 7,000 pounds. If the prestressed force is not properly transferred, failures can occur in the track.

The project will focus on how to create

an acceptable bond between the steel wires and surrounding concrete. Aspects to be examined include the mixtures of concrete, wires and indents that allow for better bonding. The team will also develop a test that prestressed concrete producers can use to determine the bond capacity of specific types of wire.

"While this project is not traditional industrial engineering research work, it is in the spirit of industrial engineering, said Wu. "We will be working with interdisciplinary teams and integrating knowledge and technologies from different areas of the engineering and science to solve real-world problems."

Ties with 12 different wires and three different strands will then be produced at CXT Concrete Ties' prestressed concrete plant in Tucson, Ariz. The transfer length in those ties will then be measured using a laser-speckle imaging device first developed by the research team along with Weixin Zhao, doctoral student in mechanical engineering, as part of a collaboration with K-State's Advanced Manufacturing Institute ten years ago. The laser-speckle device images the surface of the tie before and after detention and plots the strain profile.

Upcoming Events

IMSE Alumni Reunion

September 15
Larkspur
904 E. Douglas, Wichita, Kan.

K-State Family Day

September 17
(for more information visit the K-State website)

IMSE Scholarship Reception

September 29
Barrett Wildcat Den
K-State Alumni Center

IMSE Advisory Council

September 30
Leadership Studies Building
Kansas State University

IIE Tailgate

vs. Missouri
October 8
Bill Snyder Family Stadium
(check the IMSE website for event specifics)

Fall Commencement

December 9 & 10

Open House

April 20-21, 2012

For more information on these and other events, visit our website:

imse.ksu.edu

Alumni Connections is published by the Industrial and Manufacturing Systems Engineering department at Kansas State University. Questions about content, to change your address, or alumni update submissions should be directed to imse@ksu.edu. Our phone number is 785-532-5606.

KANSAS STATE
UNIVERSITY

College of Engineering
Industrial and Manufacturing
Systems Engineering
2037 Durland Hall
Manhattan, KS 66506-5100
443

Notice of nondiscrimination: Kansas State University is committed to nondiscrimination on the basis of race, sex, national origin, disability, religion, age, sexual orientation, or other nonmerit reasons, in admissions, educational programs or activities, and employment (including employment of disabled veterans and veterans of the Vietnam Era), as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries concerning Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and the American with Disabilities Act of 1990, have been delegated to Clyde Howard, Director of Affirmative Action, Kansas State University, 214 Anderson Hall, Manhattan, KS 66506-0124. (Phone) 785-532-6220; (TTY) 785-532-4807. 59535-6/11-24,787

Celebrating 30ish Years



In March members of the IMSE alumni representing classes 1979 through 1982 gathered on the K-State campus for a weekend of sharing fond memories and catching-up with classmates. In addition to tours of campus and the IMSE department facilities, the group enjoyed an evening in Aggieville with Dean Rathbone, a slideshow, and basketball watch party and lunch with Drs. Tillman and Konz (center front) at the K-State Alumni Center. Some 20 alumni attended. More event photos can be found on the IMSE Facebook page: facebook.com/IMSE.KSU.