

# ALUMNI CONNECTIONS

INDUSTRIAL AND MANUFACTURING SYSTEMS ENGINEERING    SPRING 2019    CARL R. ICE COLLEGE OF ENGINEERING



**KANSAS STATE**  
UNIVERSITY

# FROM THE DEPARTMENT HEAD

Greetings from Manhattan, Kansas!

I am pleased to send you this first IMSE newsletter from the Carl R. Ice College of Engineering. You've probably seen the great news that the K-State College of Engineering is now named after one of our own IE alums. You can read more about the first K-State college to be named at [bit.ly/2TATcN7](http://bit.ly/2TATcN7).

I want to assure you that K-State IMSE programs are strong. We are close to a record-high enrollment. We had a record-high number of B.S. graduates last year. Our students are getting great jobs. Our faculty have among the highest publishing rates in the college. We have a lot to be proud of but we also need your help to make our programs even stronger. You'll find more about this topic further on in this issue of *Alumni Connections* in an "editorial special" titled "Taking on the challenge of change in higher education."

Also in the pages that follow, you'll find a feature on two students' internship experiences with The Walt Disney Company. You can catch up on the continued activity and excitement being generated by our Skill Xcelerator program — brought about largely through the support of our outstanding alumni and friends. And I think you'll also be interested and pleased to read about the ongoing research and professional accomplishments of our outstanding faculty.

While higher education is definitely facing challenges, I also believe that in rising to meet them, we will come out a stronger, more focused academic institution.



Bradley A. Kramer  
Professor and Department Head  
Ike and Letty Evans Engineering Chair



# ALUMNI CONNECTIONS

INDUSTRIAL AND MANUFACTURING SYSTEMS ENGINEERING    SPRING 2019    CARL R. ICE COLLEGE OF ENGINEERING



## IN THIS ISSUE



EDUCATION

4 SENIORS TAKE PART IN DISNEY COOPERATIVE ED PROGRAM



LEADERSHIP

6 STUDENT CONSULTING TEAM SEEKS TO SOLVE REAL-LIFE PROJECTS



INNOVATION

7 STUDENT HIGHLIGHTS



EXCELLENCE

8 FOCUS ON FACULTY

10 EFFECTS OF LASERS ON ALUMINUM ALLOY

11 IMSE BY THE NUMBERS

12 TAKING ON THE CHALLENGE OF CHANGE IN HIGHER EDUCATION

14 IMSE GRADUATES

## ON THE COVER

LINDSEY HAGEMAN, IMSE SENIOR, LEFT, AND ANITA RANHOTRA, IMSE '94, ENGAGE IN DISCUSSION DURING FALL ADVISORY COUNCIL DAY.

## LEFT

CASSIDY HARPER, IMSE '18, FRONT CENTER, CONNECTS WITH ENGINEERING ALUMNI DURING FALL ADVISORY COUNCIL DAY.

## ALUMNI CONNECTIONS

is published by the department of industrial and manufacturing systems engineering, Kansas State University Carl R. Ice College of Engineering, Manhattan, Kansas.

Spring 2019

Editing and design . . . . . Engineering Communications and External Relations

Contributing to content and photography . . . K-State Communications and Marketing



# SENIORS TAKE PART IN DISNEY COOPERATIVE ED PROGRAM



EMMA DEVANE

Disney World is well known for being “the happiest place on Earth,” and IMSE seniors, Emma Devane and Sarah Peterson, found this statement to be true during their time in the Disney Parks’ cooperative education program.

Peterson worked with Disney during the spring and summer 2018 term and Devane is at Disney now for the spring and summer 2019 term. Since childhood Devane and Peterson knew they loved Disney, but the desire to become industrial engineers is what ultimately led to their interest in working with the company.

“It really drew me to the company knowing I would get to apply industrial engineering in such unique ways,” Devane said.

Both students went through the same application and interview process. Applications are completed through Disney’s online careers portal then candidates are contacted for a short phone interview. If the phone interview goes well, a second, longer video conference interview is completed.

“Disney does not have many K-State interns. I was the first in the past decade,” Peterson said. “I stressed this in my cover letter to set myself apart from the other applicants.” She also advises anyone wanting to intern with Disney to research the company to better understand the brand and its people-oriented culture.

Disney employs many industrial engineers who work on various projects across the company. Interns can be placed in several areas including resorts, parks, Hollywood Studios, transportation and retail.

During Peterson’s time with Disney she worked on projects such as streamlining food delivery services across the different resorts, increasing the number of guests carried per trip on the Magic Kingdom ferry boats and increasing guest capacity in the ESPN Wide World of Sports Complex. Her favorite project to work on was decreasing wait times of the resort pizza delivery service because she was able to see it through from start to finish.

“This project involved a lot of detective work to find where the bottleneck actually was,” Peterson said.

Devane is mainly working at Hollywood Studios in Orlando this semester. “I basically try to make every line move as fast as possible so that as many guests can experience the rides as possible,” she said.

Disney internships allow time for fun as well as work. Perks for interns include the ability to earn free park tickets for friends or family and discounts on food or merchandise. Furnished housing is also provided for interns at a cost if desired. Another perk is being able to connect with other interns from other colleges.

“I think it is super cool meeting other interns from all over the United States,” Devane said. “That is one thing I have loved about being here — all the people I met.”

Working at Disney is sure to leave interns with life-long memories, as Peterson



SARAH PETERSON

recalled details from her backstage work at Hollywood Studios.

“We shared common spaces with in-costume characters. It was completely normal to have a green army man walk by you in the middle of a one-on-one meeting or for my male coworkers to run into a fully costumed Darth Maul in the bathroom,” she said. “Our building was

also where Mulan, Brother Bear, Lilo and Stitch, and The Lion King were animated.”

“My time at Disney is the most fulfilling and rewarding experience I have ever had,” Devane said. “It has completely changed my perspective on life goals in my academic and social life and my career. I believe it has made me grow into a better person.”



# STUDENT CONSULTING TEAM SEEKS TO SOLVE REAL-LIFE PROJECTS

KSolutions, an IMSE student-managed consulting team formed out of the Skill Xcelerator program last spring, seeks experiences both on and off campus to offer free service for IE-related projects. In doing this, student team members gain valuable experience that challenges them to learn, develop and apply both technical and soft skills to real problems.

The team has already worked on several projects, one being reconstruction of the Kramer Dining Center, where students collaborated with dining management to improve operations through multiple avenues. Students focused on improving the ergonomics of workstation space and practices, which resulted in reduced hours of operation and reduced food waste in the wok line.

The team also assisted McCain Auditorium managers in creating ergonomic training methods for employees, with an emphasis on sustainability so managers can continue to use the materials developed to train new employees for years to come.

Jacob Balzer, senior; Luis Cocaurdanivia, recent graduate; and Kathryn Collins, senior; all IE, recently attended the Greater Manhattan Community Foundation Lunch and Learn to present KSolutions' mission and goals.

"Jacob, Kathryn and Luis did an excellent job representing the IMSE department and KSolutions. They were prepared, poised and articulate, with just the right amount of humor thrown in to help the audience feel at ease," said IE alumnus and attendee Connie Satzler. "They did a great job explaining what KSolutions has to offer, giving attendees an introduction to IE-type projects in a way they could be understood and used to start forming ideas for projects."

The KSolutions team continues to grow as more students become interested in working on projects.

"As student consultants, we are always looking for new and valuable project opportunities that students are eager to work on," said Justo Santacruz, IE senior and KSolutions team member.



FROM LEFT, VERN HENRICKS, PRESIDENT/CEO, GMCF; LUIS COCAURDANIVIA; ELAINE DHUYVETTER, VICE PRESIDENT, MARKETING AND PROGRAMS, GMCF; JACOB BALZER; KATHRYN COLLINS

# STUDENT HIGHLIGHTS

Two IE seniors, **Lindsey Hageman** and **Jordan Kiehl**, were among 17 K-State students selected to join the Blue Key Honor Society for the 2018-19 school year.



Blue Key Honor Society is unique in that it recognizes upperclassmen at colleges and universities throughout the nation for their exemplary and balanced record of achievement inside and outside the classroom. To be eligible for membership, students must meet the following criteria: all-around leadership in student life, high scholastic achievement, service to others, citizenship and an adherence to principles of faith.

**Thomas Anjard** had also been selected for Blue Key membership for the previous school year.

**Joe Gorthy**, IE senior and Wildcat athlete, was named Big 12 Conference Runner of the Week in September. He is the first K-State male to earn this honor since 2012.

In the first two meets of the 2018 K-State cross country season, Gorthy finished in the top five. This included a fourth-place overall ranking at the Vic Godfrey Invitational in the men's 8K race, with a time of 25:46.8, allowing K-State to secure a third-place finish.



IE doctoral students, **Kaiming Bi** and **Yuyang Chen**, center, have received the 2018 Institute of Industrial and Systems Engineers Best Track Paper Award for Modelling and Simulation. They presented their work, "An agent-based model of individual forgetting and learning behavior in epidemics," at the institute's annual conference and expo in Orlando, Florida. The paper was co-authored by IE faculty members Professor David Ben-Arieh and Associate Professor Chih-Hang (John) Wu.





# FOCUS ON FACULTY

## Easton recognized for teaching excellence

The commitment of Todd Easton, IMSE associate professor, to teaching was recognized in 2018 when he was awarded the Iman Outstanding Faculty Award for Teaching and was co-winner of the American Society for Engineering Education Midwest Section Outstanding Teaching Award.

The Iman Outstanding Faculty Awards are sponsored by the K-State Alumni Association with support from Ron and Rae Iman. Easton was awarded \$5,000 for his excellence in high-quality instruction, strong relationships with students inside and outside the classroom and a reputation for scholarship and distinguished service to the university. Easton displays these qualities through his “lecture-based tutoring” teaching style.

The 2018 American Society of Engineering Education Midwest Section Outstanding Teaching Award was presented to Easton and a co-winner at the “Putting Engineering Education in Practice” banquet hosted by the University of Missouri-Kansas City School of Computing and Engineering. Winners of this award are recognized for their classroom performance, scholarly contributions, and ASEE and local participation.



## Transistor research leads to unique findings and a publication



A research study on low-noise and high-performance transistors led by Suprem Das, IMSE assistant professor, in collaboration with researchers at Purdue University, was recently published by Physical Review Applied.

Das and his team are the first to research the inherent electronic noise that results from using atomic-scale “exotic” 2D materials such as molybdenum diselenide to build transistors. A recent study conducted by Das’ research team has systematically shown that if one can control the layer thickness between 10- and 15-atomic thin in a transistor, the device will not only show high performance — such as turning the switch “on” — but also experience very low electronic noise.

This unique finding is essential to building several enabling technologies in electronics and sensing using a number of emerging 2D materials. The research is a comprehensive extension of a previous finding where Das’ team conducted the first study on noise in MoSe2 transistors.

## Chang creates system to monitor 3D printing process



An artificial intelligence system for 3D printing process monitoring has been developed by Shing Chang, IE associate professor, and Ugandhar Delli, IE master’s student.

Chang and Delli created a production-quality monitoring system to assess 3D printed parts in real time by using machine learning, a camera and image-processing software.

“Conventionally, the quality of 3D printed parts is checked after printing is done,” Chang said.

“Detecting defects during the printing process not only helps to eliminate waste of material and time but also prevents the need to reprint the entire part.”

Their co-authored research paper, “Automated Process Monitoring in 3D Printing Using Supervised Machine Learning,” has been published in the journal, *Procedia Manufacturing*.



## Office staff and faculty member enroll in the same IMSE course

It’s never too late for hands-on learning. Todd Easton, IE associate professor, and Myra Peoples, former IE office specialist, both enrolled in IMSE 251 – Manufacturing Processes Laboratory during the fall 2018 semester.

“IMSE 251 was a tremendous learning experience for me,” Peoples said. “I enjoyed the hands-on classwork and the positive environment fostered by the instructor and his teaching assistants.”

“As a history major, I had no experience in engineering or manufacturing. This course allowed me to explore an alternative method of learning that was outside my comfort zone. The instructor did an excellent job guiding the students toward self-sufficiency. I finished the course feeling more confident and accomplished as a student.”

Easton and Peoples’ competitive spirits came out when they compared their final products to decide who had made the better vise. In the end, they decided each of their products had its own attributes and agreed to a draw.



# EFFECTS OF LASERS ON ALUMINUM ALLOY

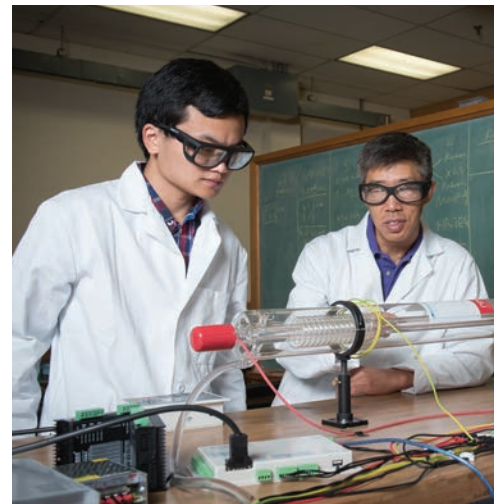


Shuting Lei, IMSE professor, and IE doctoral student, Guang Yang, in partnership with researchers from the University of Nebraska-Lincoln and Saint Louis University, have published a study on laser peening of materials made of aluminum alloy.

Lei's research team investigated the effects of three laser parameters: pulse energy, beam spot size and pulse duration. Using a high-energy pulsed laser beam, shock waves were generated that propagated through the target material and produced compressive residual stresses. The focus of this study was on 2024 aluminum alloy material widely used in the aerospace industry.

Results determined that a femtosecond laser can imprint compressive residual stresses to a depth of more than 100 μm for this material without significantly altering surface stress conditions.

This process yielded benefits such as increasing surface hardness and comparable efficiency to other methods of laser peening without surface protective coating and transparent overlay.



SHUTING LEI AND IE GRADUATE STUDENT IN LASER LAB.

# IMSE BY THE NUMBERS

## Fall 2018 Student Enrollment

Undergraduate

**254** B.S.

**30.3%** women

**8.7%** multicultural

Graduate

**55** M.S.

**27.3%** women

**12.7%** multicultural

**25** Ph.D.

**40%** women



## 2017-18 Post Grad Statistics

**\$66,105** average starting salary (B.S.)

## 2018 Faculty Publications

**58** articles

**26** conference papers



## Faculty

**12** tenured/tenure-track faculty

**1** senior instructor

## Research

FY2017 Research Expenditures

**\$3,008,971**



## 2017-18 Degrees Granted

**63** B.S.

**15** M.S.

**1** Ph.D.



## TWO NEW ADDITIONS TO IMSE STAFF

The IMSE department welcomes two new staff members: office specialist, Debra Harper and project coordinator, Brandy Webb.



HARPER



WEBB

Harper, a K-State alumna, joined the department in February 2019. She has worked for the university since 2000 and comes to IMSE from the office of International Student and Scholar Services. She is also the mother of IMSE '18 graduate, Cassidy Harper.

"Through my daughter's time in IMSE, I've grown to love this department and am excited to begin my journey here," Harper said.

Webb joined IMSE in July 2018. She has worked for the university since 2015 and has a background in nonprofit program planning. An Emporia State University alumna, she is also a K-State graduate student working toward a Ph.D. in sociology.

"I have a passion for nonprofit programming and am looking forward to applying those skills to assist the department," Webb said.



# TAKING ON THE CHALLENGE OF CHANGE IN HIGHER EDUCATION

Kansas State University is facing challenging times. As you may have seen, fall enrollment here has declined for the past five years. These declines are not distributed evenly throughout the university. The Carl R. Ice College of Engineering enrolls roughly the same number of students it enrolled five years ago, but has significantly increased its student credit hour, or SCH, production while other colleges have declined both in enrollment and SCH production. SCH production is important because it indicates tuition and fee generation.

While our college has increased student credit hour production by 19.4 percent (9,955 SCHs) over the last five years — the highest increase in the university, the largest college, arts and sciences, has decreased student credit hour production by 15 percent (47,492 SCHs). Other colleges with large percentage losses in SCH production have been technology and aviation (-23.8 percent), and human ecology (-11.2 percent). Due to its size, the loss in arts and sciences alone is three times all the gains made in architecture, business, engineering and

vet med combined. Unfortunately, the university budget process was designed for a different time. Though the College of Engineering has increased its “revenue” generation over the past five years, it has faced the same cuts as the other colleges in the university.

These challenges are not unique to Kansas State University. Higher education faces a new challenge in that many have started to question the value of a college degree. In Kansas, we are graduating more high school students than ever, but the percentage who are choosing to go to college has declined rapidly. You may have noticed many people perceive the cost of a college degree, with the corresponding high debt load many students accumulate, no longer outweighs the benefits of going to college. In my opinion, these factors are causing demand for college degrees to shrink in disproportionate ways.

K-State industrial engineering continues to provide significant value to its students and the employers of our graduates. On average, 95 percent of our students looking for jobs start great careers immediately upon graduation. In FY 2018, 16 different companies hired 56 of our graduates. Furthermore, the average starting salary for B.S. degree IE graduates



in FY 2018 was \$66,105. Compare this first-year salary to a snapshot sum of \$50,832 to pay for all the tuition and fees to earn this degree from Kansas State University. Even without programming in a lifetime of promotions and salary increases, the K-State B.S. IE degree provides an amazing return on investment.

Our president and provost are taking on the tough issues of developing new budget models and processes, and developing strategic enrollment plans and policies. We are optimistic these decisions will strengthen the university. We know it will be critical for the department to continue to recruit and retain good students and we must continue to prepare our graduates well for great careers or continuing their education.

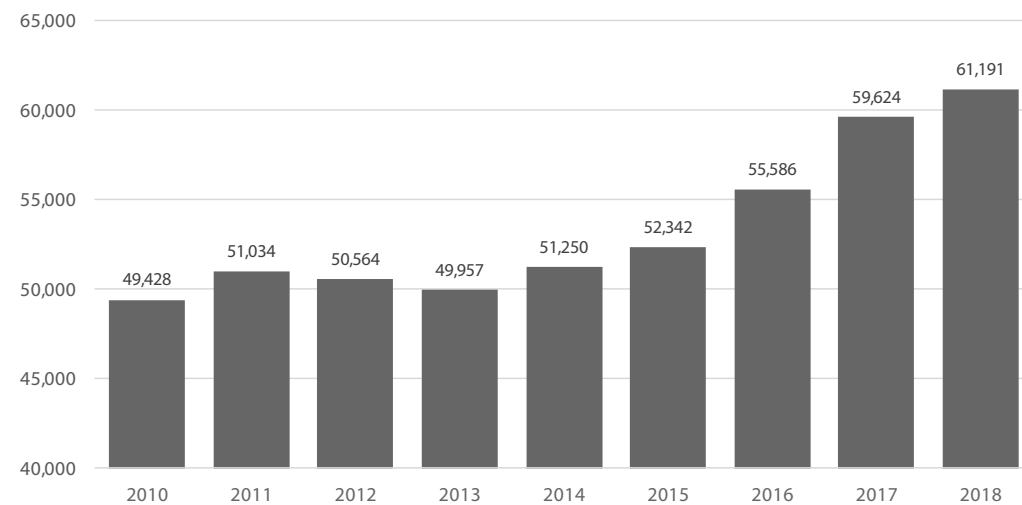
So what can you do to help? We need your assistance in identifying and recruiting outstanding students to join one of the K-State IMSE degree programs, undergraduate or graduate. Get engaged in the IMSE Professional Academy. Give back to K-State IMSE to support student scholarships, laboratory development, or faculty and student activities.

by **Bradley A. Kramer**  
**IMSE Professor and Department Head**  
**Ike and Letty Evans Engineering Chair**

The following are key K-State IMSE features you can use to help us recruit prospective students and promote the department:

- Graduates get great jobs with great companies.
- Students can earn a minor in business or statistics as part of their IE bachelor’s degree without taking additional classes.
- Students can earn their bachelor’s degree and master’s degree simultaneously with a nine-hour reduction in what it would take to complete the degrees sequentially in our concurrent B.S./M.S. program.
- Student-oriented culture — students make great connections with IMSE faculty and staff and fellow students that last a lifetime.
- Outstanding faculty teach classes using team-based projects that give students hands-on experience in the kinds of work they will do in industry.
- Alumni engagement — K-State IMSE alumni are actively engaged in supporting and building the department and our students.
- Our IMSE Professional Academy sponsors an alumni-student mentoring program open to any of our students.
- The Skill Xcelerator program helps students to “own” their educational experience and career development. It helps students to define their individual career goals, and create and execute plans to help them pursue their dream careers.
- IMSE faculty are research leaders. They publish, on average, more than three journal articles and two papers in refereed conference proceedings every year.
- IMSE students regularly lead college and university organizations including honor societies, professional groups and student government.

## ENGINEERING STUDENT CREDIT HOURS





# CONGRATULATIONS IMSE 2018 GRADUATES

## B.S. Industrial Engineering

### Spring

Fawaz Almatar  
 Adeeb Alqhtani  
 Talal Alsadhan  
 Naif Alsamma  
 Sultan Alturk  
 Josie Anderson  
 Thomas Anjard  
 Carolyn Countess  
 Kathryn Ehrlich  
 David Ewers  
 Karlee Fischer  
 Claire Fisher  
 Cameron Garwood  
 Mathew Genilo  
 Kelsi Goetz  
 Christopher Hall  
 Lily Johnson  
 Merhsa Khaleghikarahrodi  
 Corey Kirkpatrick  
 Ashley Kramer  
 Kristina Ladner  
 Stephen Leu  
 Carson Lilley  
 Amanda Malecki  
 Jacob Phillips  
 Amy Prieb  
 Nicolas Richilano  
 Kylie Schultz  
 Jeremy Selley  
 Scott Sheridan  
 Lauren Tidwell  
 Brian Wenger  
 Hannah Wilborn

### Summer

Mohammed Al Johani  
 Joe Kellerman

John Solko  
 Gage Zumbrunn

### Fall

Benjamin Adams  
 Daniel Baker  
 Luis Coca Urdanivia  
 Tyler Doyle  
 Kevin Fandawa  
 Samantha Gerstner  
 Luke Henes  
 Troy Hilderhof  
 Brendon Hutley  
 Anna Kleibohmer  
 Malik Livingston  
 Ryan Loiacono  
 Salvador Munoz  
 Scott Perlenfein  
 Anna Pyle  
 Landon Root  
 Garrett Sanders  
 Samuel Sizelove  
 MacKenzie Suderman  
 Ramie Taylor  
 Denis Uzdil  
 Norma Eunice Varona Ortiz

## B.S./M.S. Industrial Engineering

### Spring

Curtis Cline  
 Mitchell Gradert  
 Cassidy Harper  
 Abigail Hilliard  
 Jordan Smith  
 Jessica Zidekl

### Fall

Candace Kuecker  
 Laurin Wagner

## M.S. Industrial Engineering

### Spring

Ghazi Alenezi  
 Hanxiong Fan  
 Joochwan Jung  
 Eric Rogler  
 Changdong Shao  
 Chia Tai

### Fall

Ugandhar Delli  
 Tzu-Yin Su

## M.S. Operations Research

### Spring

Ashton Kappelman

### Fall

Andrew Eickbush

## Master of Engineering Management

### Spring

Kurtis Barnett  
 Creagan Stickney  
 Caleb Stumpf

### Fall

Brett Scott

## Ph.D. Industrial Engineering

### Fall

Nibal Albashabsheh



IMSE FALL 2018 GRADUATES



IMSE SPRING 2018 GRADUATES

# KANSAS STATE UNIVERSITY

## INDUSTRIAL AND MANUFACTURING SYSTEMS ENGINEERING

Here is my check or credit card authorization for a gift of:

\$1,000  \$500  \$250  \$100  Other \$ \_\_\_\_\_

I would like my gift to go to the:

Industrial Engineering Excellence Fund I27800  
 Other \_\_\_\_\_

Name (print) \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

Please make check payable to Kansas State University Foundation

Credit card payment:

If this is a business credit card, business name: \_\_\_\_\_

As an added benefit to our donors, the foundation absorbs the fee charged by your credit card company.

CARD NUMBER \_\_\_\_\_ EXP. DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_ PHONE \_\_\_\_\_  
 Required for credit card gifts

Or make your gift online at [give.evertrue.com/ksu/engineering](http://give.evertrue.com/ksu/engineering)

- Contact me/us about creating a scholarship.
- Contact me/us about gifts that pay lifetime income.
- I/We have provided for K-State in my/our will.

### Matching gift information

If you or someone in your household works for a matching gift company, contact your human resources department to see if your gift qualifies for a company match. For more information, contact our matching gift coordinator by calling 785-775-2000 or visit [ksufoundation.org/match](http://ksufoundation.org/match).

**Thank you for your generous support!**

Please return this card to: KSU Foundation, P.O. Box 9200, Shawnee Mission, KS 66201-1800.



#### NOTICE OF NONDISCRIMINATION

Kansas State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status, in the university's programs and activities as required by applicable laws and regulations. The person designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning the nondiscrimination policy is the university's Title IX Coordinator: the Director of the Office of Institutional Equity, [equity@k-state.edu](mailto:equity@k-state.edu), 103 Edwards Hall, 1810 Kerr Drive, Kansas State University, Manhattan, Kansas 66506-4801. Telephone: 785-532-6220 | TTY or TRS: 711. The campus ADA Coordinator is the Director of Employee Relations and Engagement, who may be reached at [charlott@k-state.edu](mailto:charlott@k-state.edu) or 103 Edwards Hall, 1810 Kerr Drive, Kansas State University, Manhattan, Kansas 66506-4801, 785-532-6277 and TTY or TRS 711.

Revised Aug. 29, 2017



### 2018-19 IMSE ADVISORY COUNCIL

Chris Althoff, West Monroe Partners  
Brett Beem, TVH Americas  
Judy Bloch, Citi  
Sara Coash, Hallmark Cards Inc.  
Robert C. Copple, Via Christi Hospital Manhattan  
Kyle Franklin, Lockheed Martin  
Paul Garcia, John Deere Waterloo Works  
Mike Heatwole, Mars Wrigley Confectionery  
Darren Haverkamp, Hill's Pet Nutrition/Colgate-Palmolive  
Dresden Huston, Frito Lay (PepsiCo)  
Shelley Jaderborg, Torotel  
Lori Jester, AveXis  
Kerry Kaiser, J.B. Hunt Transport Inc.  
Mandy Kelly, Honeywell  
Mark Neier, Deloitte Consulting LLP  
Gordon Rourk, American Airlines  
Connie Satzler, EnVisage Consulting Inc.  
Kristine Sheedy, ExxonMobil  
Brian Spano, Wilson & Company  
Mason Stewart, Garmin International Inc.  
Simeon O. Terry, Austin Commercial L.P.

The following emeritus members of the IMSE advisory council concluded active service in 2018: Bryce Huschka, Dan Janatello, Jeff Kerbs and Brian Zerr.