Message from School Head.................................................................Page 3
IEM Mission, Vision & Goals.............................................................Page 4
Giving Opportunities ........................................................................Page 5
Faculty & Staff Spotlight .................................................................Page 6
Student Spotlight ...........................................................................Page 7
Alumni Spotlight ...........................................................................Page 9
Industrial Advisory Board ...............................................................Page 12
Bell Ringing Ceremony ....................................................................Page 13
Seminar Series ................................................................................Page 14
Welcome and Congratulations .......................................................Page 15
Engineering Technology and Management .....................................Page 17
IISE South Central Region Student Conference ............................Page 18
IEM Fall 2016 Commencement Luncheon .......................................Page 19
Industrial Assessment Center .........................................................Page 20
Faculty Accolades ...........................................................................Page 21
Who’s New in IEM ...........................................................................Page 22
Student Awards ...............................................................................Page 23
Student Chapters ............................................................................Page 24
Research ..........................................................................................Page 26
Research Grants ...............................................................................Page 28
Journal Publications .......................................................................Page 29
IEM Faculty and Staff......................................................................Page 31
Cowboy Academy ...........................................................................Page 32
2016 Tailgating ................................................................................Page 34

Dr. Sunderesh S. Heragu
School Head, Regents Professor, and Humphreys Chair

Dr. Terry Collins
Undergraduate Program Director

Dr. Balabhaskar Balasundaram
Graduate Program Director

Industrial Engineering & Management
322 Engineering North, Stillwater, OK 74074
405-744-6055 iem.okstate.edu
Oklahoma State IE&M @OkStateIEM
Greetings!

Despite the budget constraints imposed on higher education, IEM at OSU is making great strides relative to the markers outlined in our strategic plan. Our goal can be summarized by five 20’s – To name and endow IEM at $20 million, grow faculty size to 20, and make IEM among the top 20 programs by 2020.

We are making progress on all fronts. The US News ranking of graduate programs in Industrial/Manufacturing/Systems Engineering put IEM in the 33rd place, compared to 39 last year. We will have fourteen faculty in Fall 2017. Mr. Juan Borrero, PhD candidate at the University of Pittsburgh will be joining IEM this Fall. A 1970 PhD graduate has committed to a six-figure deferred gift. I will soon be reporting on additional progress we have made relative to our endowment goal.

Site work is underway for the new $35 million Endeavor lab (see https://ceat.okstate.edu/undergraduate-lab). The 2nd and 3rd floors of Engineering North will undergo a full renovation next year. (The 4th and 5th floors have already been renovated and are home to Chemical and Petroleum Engineering as well as Engineering Technology). New faculty have been hired in multiple disciplines. The College of Engineering, Architecture and Technology is witnessing a renaissance. Alumni will have multiple opportunities to be a part of this significant transformation.

- Student-focused opportunities include: sponsoring study abroad and regular scholarships – some with matching donations, sponsorship of student events, and student travel to national conferences. These gifts range from $2,000 to $25,000.
- Faculty-focused opportunities include: endowing a Professorship or a Chair and range from $0.5 million to $1 million.
- Program-focused opportunities include: having your name engraved on a donor wall, billboard sponsorship, seminar, laboratory or student lounge naming opportunities and endowing the School of Industrial Engineering and Management.
- Engraving your name on a donor wall costs as little as $1,000. Other giving opportunities range from $15,000 to $2 million.

The undergraduate enrollment is at an all-time high of 172, compared to 125 in 2013. The Fall 2016 freshman class had more women students than men. Our undergraduate students excelled at the IIE South Central Regional conference hosted by Texas Tech. James Darling, graduating senior, placed second in the student paper competition.

OSU's online master's engineering programs (of which the fully online MS program in Engineering and Technology Management is a major player) was ranked among the top 25 public institutions by US News; GradSource ranked it fifth among peer institutions.

In Fall 2016, IEM launched the Cowboy Academy of Industrial Engineering and Management to: (i) recognize the accomplishments of IEM alumni; (ii) harness their expertise and talent for advancing IEM so it can continue to produce distinguished alumni; (iii) have Academy members serve as role models for current students; (iv) help enhance IEM’s visibility; (v) serve as a sounding board for the School; and (vi) help with special projects. Twenty-six distinguished members were selected for the inaugural class. Information about the Academy and member biographies are available at iem.okstate.edu, as well as on pages 32-33 of this newsletter.

Due to the numerous exciting things happening in IEM at OSU, we will increase the frequency of communication with our alumni. Be sure to read our electronic newsletters as well our twitter, facebook, and linkedin postings.

Go Pokes!

Sunderesh S. Heragu,
Regents Professor, Head and Humphreys Chair
Vision

IEM’s vision is to place industrial engineers in a wide variety of industries including manufacturing, service, energy, healthcare, humanitarian and others, so that our society at large can benefit from systems that effectively use an optimal set of resources, efficiently produce goods or provide services and enrich the quality of life for all.

Mission

IEM’s mission is to develop a diverse group of professionals and leaders in industrial engineering and management by being a leader in education, research, and outreach.

Educational Goals

IEM’s educational goals are to educate and produce a new generation of diverse students who are proficient in theoretical, applied, and technology relevant concepts and practices that will have a global reach and global impact. IEM will continue to monitor and enhance the student recruiting, learning, retention, advising, mentoring, internship, and placement processes.

Research Goal

IEM’s research goals are to engage in cutting edge research of global importance and to produce innovators as well as next generation engineering, education, and societal leaders.

Outreach Goals

IEM’s outreach goals are to actively engage in community projects, economic development, and service for the greater good. The outreach goals also include enhancement of IEM’s image within CEAT and OSU and the world at large.
The School of Industrial Engineering and Management looks to alumni and friends, like you, who make the next steps in our innovative future possible. We appreciate every donation, big or small, that supports our school. However, we have listed below several priorities for you to make the most impact.

**Naming opportunity for student lounge in IEM’s refurbished location** | $2,000,000
- IEM spaces will be fully renovated by 2018

**Naming a lab in the Undergraduate Laboratory Building** | $1,000,000
- for more information visit ceat.okstate.edu/undergraduate-lab

**Endowing a chaired professorship** | $1,000,000

**Endowing a professorship** | $500,000

**Annual sponsorship of the weekly seminar series with a naming opportunity** | $75,000

**Sponsoring IEM networking events** | $25,000

**Annual sponsorship for student travels** | $25,000
- IIESE conferences, commencement lunches, IAB-student luncheons and IEM reception at annual IIESE meeting

**Annual contribution to two IEM billboards** | $15,000 per year

**Study Abroad Scholarship** | $2,000 per student
- scholarship can be awarded to up to 12 students

**Space on donor wall in refurbished IEM space** | $1,000
- IEM spaces will be fully renovated by 2018

Any gift made by a donor to the IEM at $2,500 or more will receive a $2,500 matching scholarship from a generous benefactor that will be awarded to an IEM student in the donor’s name.

**Naming and endowing opportunity of IEM** | $20,000,000

If you wish to donate, please send a check payable to the “Industrial Engineering and Management Excellence Fund” at Oklahoma State University, 322 Engineering North, Stillwater, OK 74078 or make a gift online (click the GIVE button at iem.okstate.edu).

For more information please contact

Bryce Killingsworth – Assistant Development Director

Office: 405-385-5623
Cell: 405-385-3497
Email: bkillingsworth@osugiving.com
Amber Huffman
Administrative Assistant Support II

Amber joined IEM in October 2016 and has thoroughly enjoyed working with her fellow staff, as well as the faculty and students. She has enjoyed the opportunity to meet and work with so many amazing people from across the globe. Amber graduated from East Central University, in Ada, OK, in 2014 with her BA in English with a Minor in Mass Communications. She will be returning to ECU via an online program for her Master’s in Education with a focus in library media in the fall of 2017.

Amber lives in Stillwater with her husband Jonnathon and their 7-year-old canine fur child Jasper E. Lee. In her spare time, Amber enjoys studying languages, and is currently studying French and Spanish. Amber’s hobbies include, but are not limited to, photography, playing her viola, salsa dancing, binge reading, writing both poetry and prose, and finding as many creative outlets as possible.

“Love and Compassion are necessities, not luxuries. Without them, humanity cannot survive.”
- Dalai Lama
Sarah Cannon
Undergraduate student

Sarah grew up in Enid, OK with a loyal and true OSU family. Her own love of sports and OSU basketball ensured that her only choice of college would be OSU. The biggest selling point of the IEM department for her was the breadth and diversity of career opportunities available to IE’s as well as the core ideas of problem solving and systems improvement. Sarah has been involved with Alpha Pi Mu and the Institute of Industrial and Systems Engineers where she has come to know students, faculty, and alumni even better. From cookouts at Dr. Collins’ ranch, football tailgates, casting miniature anvils with Dr. Nazemetz, as well as epic volleyball tournaments at the IISE conferences, Sarah has had a blast with the IEM department. Sarah is confident that she has the tools and experiences that will enable her to make a positive impact wherever she goes, and she is so thankful to the IEM department and its faculty.

“We make a living by what we get, but we make a life by what we give.”
– Winston Churchill

Akshay Nigade
Master’s student

Akshay’s parents taught him to be good to people, to be honest and instilled in him the belief that there is no substitute for hard work. These beliefs have shaped him into a self-inspired individual who takes on challenges and has been successful in achieving his goals. Akshay earned his Bachelor’s degree in Mechanical Engineering from the University of Mumbai, India. To get hands on experience in his field of interest, he worked for two years and four months as a Machinery and Package Engineer at Maire Tecnimont Pvt. Ltd. – a leader in Engineering, Procurement and Construction of Oil and Gas Projects. There he worked on various projects which improved his understanding of supplier management, procurement planning, leadership, and process improvement. To enhance his knowledge base, Akshay joined OSU in the Fall of 2016 as a Masters student in the IEM department. In his opinion, OSU has a very beautiful campus and it feels like home for many who have chosen to attend. As a student he learns new things here every day that enrich his life experiences. After performing well in the Fall semester, Akshay was given the opportunity to work as Graduate Teaching Assistant under Dr. Glenn for ENGR 1412. He has also been instrumental in setting up the APICS OSU Student Chapter as VP of Networking and Student Membership. Previously, Akshay held the position of Technical Head in Mechanical Engineer’s Association during his undergrad. Akshay is an ardent soccer follower and a big Manchester United Fan. He has a love of dancing and has won gold medals in a variety of sports, including Soccer, Volleyball and Carrom during his undergrad. After graduation Akshay plans to work on a variety of projects in the field of supply chain management, working with business teams of oil and gas firms.

“There is no substitute for hard work”
– Thomas A. Edison
Jordan Barber
Master’s ETM distance education student

Jordan was raised in Dallas, Texas and spent most of his childhood playing sports and being active in church. He applied for the Air Force Academy during his junior year of high school and quickly received a congressional nomination from his congressman, as well as Senator Kay Bailey Hutchison. Jordan graduated from the Air Force Academy with his BS in Civil Engineering and commissioned as Second Lieutenant in 2009. Jordan was then stationed at Fairchild AFB in Spokane, WA. While many of his friends were attending OSU, he was fortunate enough to visit the campus during his minimal breaks from the Air Force Academy. He loved the campus and its cultures. Seeing the success his friends, and their alumni parents, experienced from the education they received there only helped feed his desire to attend OSU some day. It was on his first deployment that he realized that he needed to begin his master’s degree. His closest colleagues overseas happened to be enrolled in OSU’s MBA program, and expressed how much they enjoyed the program, as well as how much OSU helped military members with distance learning and tuition assistance. It was very clear that he hadn’t missed his chance to be an OSU alumni after all. When he found the MSETM program that blended his interests in engineering and business, it was a no-brainer for him to enroll. His degree has taken time due to moving, and time spent overseas, but he has gained countless skills applicable to both of his careers and will be forever grateful for OSU and the MSETM staff. Jordan will always be proud to be a Cowboy!

“Heroes get remembered but legends never die.”
- The Great Bambino (Babe Ruth)

Patrick Smith
Doctoral Student

Patrick Smith is an IEM doctoral candidate from Little Rock, Arkansas. He has served as a research associate in the Oklahoma State University Industrial Assessment Center (IAC) for the last four years. During that time he has participated in over sixty energy assessments at small and medium sized manufacturing facilities in four states. He is currently the center’s lead student and helps to provide training for incoming students, handles daily operational activities in the center, and authors assessment reports. His dissertation research is under the supervision of Dr. William Kolarik and focuses on investigating how formal energy management systems can be implemented in a cost-effective manner at facilities similar to those assisted by the IAC program. An important aspect of successfully implementing such systems is providing them with data from existing management systems and from tools, such as advanced metering, in order to produce actionable information. These systems would also serve as a component of smart manufacturing initiatives. In his free time, he enjoys spending time with his wife and family, training his dog, traveling, and woodworking.

“Believe you can and you’re halfway there.”
- Theodore Roosevelt
Q & A with Tom Britton

Tom received his BSME in 1966 and MSIEM in 1968 from OSU. He spent 35 years in the consulting profession and is a retired partner from Pricewaterhouse Coopers. He served as the Chief Operating Officer of the firm’s West Region Consulting Practice of over 1,500 professionals, and Chairman of the Global High Technology Industry Consulting practice. He directed large global projects ranging from the formulation of corporate strategy and the design and implementation of business processes to the implementation of technology systems for the planning and control of operations. One of his clients went on to win the coveted Deming Prize, awarded by the Union of Japanese Scientists and Engineers. His clients included Florida Power & Light, Northrop, IBM, Allergan, Silicon Graphics, Intel, Hewlett Packard, Sun Microsystems, Western Digital, Microsoft, and Compaq. Currently, he serves on the Leadership Council of the OSU Alumni Association and is listed in Who's Who in America.

How have your IEM degrees helped you?
They have significantly broadened my career opportunities and allowed me to focus my engineering analytical skills to solving complex business problems. Late in pursuing my BSME degree, I realized that being a design engineer was not my preferred career choice. This realization came after interviewing over 50 companies beginning in my sophomore year. As part of that process, I learned that business problems were increasingly being solved using analytical techniques. I learned that the business environment also represented a complex set of legal, financial, human resource, and non-technical issues. The IEM curriculum exposed me to these issues and gave me the tools to make my way in the business community.

What aspects of your OSU affiliation (while you were a student) or faculty interactions stand out?
I was immediately impressed with the wide range and talent among the faculty. Equally important, I was impressed with the personal attention they offered and time spent with students. One man among these talented staff was the most influential in my life - Dean Wilson Bentley. He asked one day whether I had found a career that excited me. When I responded with a “no”, he asked whether I had ever considered a management consulting career? He then proceeded to send my resume to a professional associate in New York who happened to be a management consultant. Long story short, I interviewed with his firm and suddenly felt like I had found my stride. From there I interviewed with other management consulting firms, deciding to accept an offer. From that point on I spent my entire career with two firms – Ernst & Young and PricewaterhouseCoopers. I can easily say that were it not for Dean Bentley and his taking time to coach me, I would not have enjoyed the passion that became my career.

What has motivated you to stay engaged with OSU years after graduation?
A lot of other people were part of my success, having coached me through encouragement, teaching, and mentoring. The earliest of those people were the professionals at OSU who inspired me and set an example for excellence and leadership. I knew that I owed a debt to those who helped me and gave me my opportunity. So, it is my responsibility to those who follow to carry on the gifts given me by “paying it forward”, and giving others a platform from which they can thrive, be happy and successful. OSU is a part of me and is my home. It will never leave me.

What do you think the future holds for the IEM student?
It is unlimited. The range of opportunities are increasing every day. The breadth of education and exposure to real world problems that student receive in IEM at OSU is impressive. The IEM students will be equipped, they just have to follow their passion, and pour their hearts and energy into it. The emerging problems of our internationally integrated businesses offer complex issues which have never been resolved. The environments are at the forefront of new technologies, human capital integration, new capital formation schemes, and powerful political forces. The graduate IEM student is prepared like no other degree to step in and be a part of redesigning the world for a more efficient and rewarding tomorrow.
Bob Norris graduated 58 years ago and has pursued a wide variety of careers. He has worked in multiple industries including engineering, retail, and real estate. He met his wife at OSU and married her a week after graduation. Bob is passionate about real estate and his alma mater. The course taught by Dr. Wilson Bentley and the book “Functions of the Executive” have left a deep impression on him.

**How has your IEM degree helped you?**
In looking back at my IE school experiences, I have referred numerous times to the book (and course) “Functions of the Executive”. The course that stands out the most was one I took my last semester with Gary Stegall, who wound up as a groomsman in my wedding. Jack Culpepper and I were assigned to a company in Tulsa called “Hasty Bake”. We conducted a study on manufacturing and materials flow. They were growing leaps and bounds and were not very efficient in their processes. We finally were able to put into motion what we had learned. I am happy to report that they are still in business today.

**What aspects of your OSU affiliation (while you were a student) or faculty interactions stand out?**
I am a big proponent of co-op and intern education, especially during the last two years of college. I was blessed to have Dr. Theusen in Functions and had a great time with Earl Ferguson. He being a Texas Aggie and I a former Rice football player, ensured we always had great time, particularly because we always beat them!

**What has motivated you to stay engaged with OSU years after graduation?**
I met my wife (Kay Baum) as OSU. We got married one week after graduation. We agreed our time at OSU was the most fun we had in our lives, and we had no money. We decided we would make OSU the beneficiary of our estate after our children. It’s a little like the Marines - “once a cowboy, always a cowboy”.

**What do you think the future holds for the IEM student?**
I think the future for IE graduates is great. As I stated earlier, you have the basics of all engineering fields and can look at the overall picture, not just one aspect.

**Why is international exposure important for today’s engineers? How would they benefit from availing of study abroad opportunities?**
The world is so much smaller than when I graduated. I was in foreign trade at Caterpillar. I realized there were places overseas besides London, Rome and Paris (which the people with seniority got the pleasure of working in those locations.) I then switched to domestic sales.

I will forever thank OSU for the place I met my wife and the “Functions” course. The one thing that stood out to me was that you can never remain the same. I am the classic example - Engineering, Retail, and now Real Estate. I am forever changing the way I do Real Estate.

I know my field was not predominantly engineering, but I feel it “educated” me to analyze situations and look at the broad view and not a limited view.

“My life has been a great ride!”

-Bob Norris
Mike graduated in 1970 and 1972 with a BS and MS in IEM from OSU while on football scholarship. He has worked in Supply Chain Management throughout his career in several different industries including oilfield, retail, telecommunications, and health care. He is currently employed as the Director of Product Development and Supply at Compression Solutions, a company that distributes a medical device to prevent Deep Vein Thrombosis (DVT) and previously owned a Polo Ralph Lauren retail store for 15 years. An active community participant, he has been President of the Board of the Center for Individuals with Physical Disabilities, a founding member of the Rotary Club of North Tulsa, President of the Utica Square Merchants Association, and has held many leadership positions in his 39-year membership at Asbury Methodist Church. He has been a registered professional engineer in Oklahoma and California.

How has your IEM degree helped you?
My IEM degree has helped me in many ways. First, it provided me with a broad background that included technical basics as well as the business basis for operating in a company, i.e., accounting, finance, and management. Second, it helped me develop skills that I enjoy using. These include making processes more efficient, planning, and working with people. Finally, my IEM degree gave me the skills to work in just about any industry. I have applied what I learned from IEM program in design engineering, oilfield supply, clothing retail, communication industry, and in healthcare. Few degrees provide that variety of opportunities.

What aspects of your OSU affiliation (while you were a student) or faculty interactions stand out?
Several of my good friends today were with me during my IEM journey. We still keep in touch and reminisce about the great times we had at OSU. The faculty had a significant impact on me in the way that they cared about the students. They cared how you were doing and engaged with you on a personal basis. It made you feel like part of a family.

What has motivated you to stay engaged with OSU years after graduation?
I have stayed engaged at OSU after my graduation primarily because my family has had an endearing relationship with OSU for over 75 years. My father attended OSU on a wrestling scholarship and without that scholarship, he could not have gone to college and have the success he had. My father’s appreciation for the education he received at OSU led him to attend most of OSU’s athletic events and “give back” generously to OSU throughout the years. As a result, I grew up with Orange blood in my veins. I have not missed more than 5 home football games since I started at OSU in 1966. Because of my business interests, I became involved with the College of Human Sciences and was on the Dean’s advisory board for about 20 years. This deepened my appreciation for the issues that face the colleges and the university as a whole.

What do you think the future holds for the IEM student?
I feel the future is bright for current IEM graduates as many companies are increasingly realizing the capabilities of individuals who have obtained an IEM degree because of the broad education they receive. There are a wide range of opportunities to apply the skills learned in the IEM program.

What are a couple of highlights of your career?
As a result of my IEM background, I was able to change industries several times and be successful. I was working in the oilfield supply industry when an opportunity arose to run and own a floundering high-end retail store that included mens, womens, childrens, and home furnishings. I had no previous experience in this field. Through time we were able to turn the operation around and operate it for 15 years. Without the breadth of knowledge that the IEM degree provided, I probably would not have been able to do this successfully.

“God so loved the world that he gave...”
- John 3:16
Dear OSU IEM Partners,

Greetings from the OSU IEM Industrial Advisory Board (IAB). The IAB serves the OSU IEM community through Student, Faculty, and Alumni outreach, and by providing industry feedback in the ABET Accreditation process. In the Fall of 2016, IAB awarded its first scholarship. The recipient, McKenna Morrison, was awarded a scholarship in the amount of $1,350. This semester, volunteer board members are currently coaching six IEM Senior Design Teams.

The IAB would like to extend its sincere appreciation to each of you who expressed an interest in joining the Board. The response was overwhelming and we were extremely pleased to know a number of you are willing to give back to OSU IEM in this capacity. We are planning on adding two new board members in the Fall of 2017. Those interested should contact Syam Antony at: syam.anthony@walmart.com.

Please join us in welcoming our new Industrial Advisory Board members:

**Brian Adams:** Brian earned a Bachelor of Science degree in Industrial Engineering and Management at Oklahoma State University in 1996 and a Master of Science degree in Industrial Engineering from Wichita State University in 2002. Brian is currently a Senior Manager of Process Engineering at Textron Aviation, a leader in general aviation and manufacturer of Beechcraft and Cessna aircraft. He has held several positions within Textron Aviation including Industrial Engineering, Lean Six Sigma, Finance, and Operations Management. Brian currently resides in Wichita, Kansas.

**Kevin Doeksen:** Kevin earned a bachelor of science degree in Industrial Engineering and Management from Oklahoma State University in 1995 and a Masters of Business Administration degree from Southern Methodist University in 1997. Kevin has worked at American Airlines for the past 19 years in numerous roles of increasing levels of responsibility across various departments in Operations, Finance, and Customer Experience. He is currently Managing Director of American Eagle Strategy and Operations. Kevin resides in Dallas, TX.

**Members**

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<th>Ashley Estes</th>
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<td>Bill Dueease</td>
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<td>Tandem, Ltd</td>
<td>The Wilcox Company</td>
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IEM held their Spring 2017 bell ringing ceremony on March 3rd, 2017. Students, faculty, staff and advisory board members including Baski Balasundaram, Austin Buchanan, Dan Crawford, Tim Hardin, Amber Huffman, William Kolarik, Tieming Liu, Cara Noltensmeyer, Jeff McKnight, David Reed, Stephanie Royce, Matt Turner, and Chaoyue Zhao were recognized for various awards and honors received during the Fall 2016 and Spring 2017.
Fall 2016

Aug. 24: Stochastically-Constrained Simulation Optimization On Integer Lattices, Dr. Kalyani Nagaraj, Oklahoma State University

Aug. 31: Disruption Control with Crew Recovery, Dr. Sujeevraja Sanjeevi, Sabre

Sep. 16: Manufacturing Analytics: Synergies between Engineering and Statistics, Dr. Jan Shi, Georgia Institute of Technology

Sep. 21: Shape Engineering for Advanced Manufacturing (SEAM), Dr. Shivakumar Raman, University Oklahoma

Sep. 28: Exact Algorithms and Bounds for the Dynamic Assignment Interdiction Problem, Dr. Cole Smith, Clemson University

Oct. 12: Electric Power Generation Expansion Planning: Robust Optimization Considering Uncertainty and Climate Change, Dr. David Coit, Rutgers University

Oct. 19: OSU Has a Competitive Position to Catch the Health Data Analytics Wave, Dr. William Paiva, Oklahoma State University

Oct. 21: The Goldsboro Broken Arrow – When the U.S. Nuked North Carolina, Dr. Jack ReVelle, ReVelle Solutions, LLC

Oct. 26: Network Optimization and Electric Vehicle Routing, Dr. Mark Nejad, University Oklahoma

Nov. 2: Perspectives on Building Successful Career as Analytics and Operations Research Practitioner, Dr. Homarjun Agrahari, FleetPride, Inc.

Spring 2017

Jan. 17: Stochastic Models for Strategic Sourcing in Supply Chains, Dr. Ashesh Kumar Sinha, Schneider International

Jan. 19: Sequential High-Dimensional Data Analysis for Anomaly Detection and System Monitoring, Mr. Hao Yan, Georgia Institute of Technology

Jan. 24: Data Analytics for Complex Systems: Improving the Science of Health Care Delivery, Dr. Devashish Das, Mayo Clinic

Jan. 26: Sequential Max-Min Bilevel Programming with Incomplete Information and Learning, Mr. Juan Borrero, University of Pittsburgh

March 9: SSMAC Impact-Social, Mobile, Analytics, Cloud, and the Engineer, Mr. G. Satish, Connixt

March 23: Learning Enabled Optimization: Towards a Fusion of Stochastical Learning and Stochastic Optimization, Dr. Suvrajeet Sen, University of Southern California

March 24: Modeling and Analysis for Cancer Screening, Dr. Julie Higle, University of Southern California

March 30: Optimization in Medical Analytics: From Data to Knowledge to Decisions, Dr. Art Chaovalitwongse, University of Arkansas

April 13: Internet of Things, Real-Time Decision Making, and Artificial Intelligence, Dr. James Tien, University of Miami

April 20: Optimizing Prioritized and Nesting Solutions, Dr. David Morton, Northwestern University
Welcome! We look forward to getting to know all of you and helping you on your way to becoming successful industrial engineers!

Ibrahim Abuemah
Mohammad Alshaduki
Alex Cannon
Kasey Tegan
Edgar Guzman

Kasey Hendrick
Paula Henicke
Patrick Hogan
Carson Kilgo
Erik Mejia
Justin Paxson

Breonna Sattre
Aaron Shumman
Code Timmons
Cara Watts
Susan Weckler

Welcome New Graduate Students

**MS IEM**
Taylor Mastin
Suzann Watson

**MS ETM**
Brandie Brown
Gabbriela Cooley
Ryan Davis
Cody Fields
Theresa Flood
Keenan Graham

Parker Herrington
Martin Keiner
Bailey Nett
Rebecca Pettenski
Taylor Piccinich
Adrian Smith
Bryce Vanelson

**PhD**
Mostafa Amini
Harshal Kaushik

Congratulations Graduates

OSU held its commencement ceremony on December 9th and 10th, 2016. We would like to congratulate the following IEM students for their hard work and dedication in completing their degree. These students received either: Bachelor of Science in Industrial Engineering and Management, Master of Science in Industrial Engineering and Management, Master of Science in Engineering Technology and Management or Doctorate of Philosophy.

**BS**
William Fryt
Tait Garroutte
Trey Gilbertson
Jacob Hart
Zane Johnson
Mengyue Ma
Taylor Mastin
Anthony Minor
Rohit Mishra
Erin Nash
Kyle Tennyson

**MS IEM**
Aditya Agrawal
Christopher Almeras
Abhishek Devadiga
Vijay K. Ganti
Tharun Jarugumalli
Sampreet Mangalvedhe
Rahul Sati
Ritesh Shetty

**PhD**
Shuzhen Sun

**MS ETM**
Megan Butler
Richard Nti Gyabaah
Kevin Hass
John Hladik
Derek Justice
Jodie Millican
Scott Pride
Aaron Sides
Velma Taurainen

Good luck in all your future endeavors!
What are a couple of highlights of your career?
My first most rewarding moment was being admitted to the partnership in an international public accounting, tax, and management consulting firm. It marked a confirmation that I had not only selected the right career for myself, but that I had succeeded in reaching a plateau many aspire to but never achieve. I have been fortunate enough to achieve many other milestones in my life as well. At the height of my career I was the Global Chairman of PwC’s high technology industry management consulting practice – representing over $1.0 billion in fees. At the same time, I was the COO of the western region consulting practice, comprising over 1,500 consultants and partners.

Why is international exposure important for today’s engineers? How would they benefit from availing of study abroad opportunities?
The business world will forever be seeking the most favorable climate to operate and produce services or products. Whether by official governance through a single company or through strategic partnerships, the business structures will constantly change based on emerging political, financial and technology opportunities. An IEM graduate has to prepare for and embrace these changes at a rapid pace. As international capabilities expand, the IEM graduate has to be in front of those emerging capabilities. They must be on the leading edge of innovation and emerging opportunities. With the world shrinking faster and faster every day, the IEM student MUST seek a deeper understanding and comfort with international opportunities.

The ability to excel in today’s business climate can only be facilitated by on the ground experience. I had a two year project in Alexandria Egypt in the early stages of my career and at that time I was unprepared for the cultural norms and expectations. Further, I was frustrated at the pace of and commitment to getting the job accomplished right the first time. I was overloaded by the visual differences of the environments. Had I some prior exposure in the middle east, I could have been much more effective than I was.

Equally, I had projects in China, Korea, Indonesia, Japan in my career – all with different cultural approaches to business issues. Each required a mountain to climb in order to be effective. Lastly, the global integration of supply-chains beginning in the 1990s and continuing today require working across multiple cultures simultaneously, a trying and at times exhausting demand.

“To try and fail, is to learn. To fail to try is to suffer the loss of never knowing what might have been.”
Chester I. Bernard offered this preamble in his book, Functions of the Executive” (1910)
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In March 2017, members of the IISE Oklahoma State University student chapter attended the South Central region student conference at Texas Tech, Lubbock, TX. While there, James Darling, President of the IISE chapter at OSU, placed second in the student paper competition.

IEM students dressed to impress at the IISE South Central region student conference in Lubbock, TX

Go Pokes! IISE South Central region student conference at Texas Tech in Lubbock, TX
IEM held their Fall 2016 commencement luncheon on Saturday, December 10th, at the Conoco Phillips Alumni Center. Nearly 100 hundred guests, including graduating BS, MS, and PhD students and their families were in attendance along with faculty and staff from IEM.
Under the supervision of Dr. William Kolarik, the IAC team from Oklahoma State University (OSU) performed an energy-use assessment at an Oklahoma steel mill on March 29, 2017. Students on the IAC team appreciated the opportunity to evaluate the internal processes of a steelmaker with a connected load of 50 MW and annual production of more than 300,000 tons of steel wire used to produce fencing products.

This vertically integrated mini-mill spans 280,000 square feet and includes steel scrap processing, an electric arc furnace, casting, rolling, drawing, and coiling facilities. The plant utilizes several modern systems, including a state-of-the-art water reclamation and treatment plant. OSU’s IAC staff were alerted to this plant’s keen interest in sustainable operation by the manufacturing extension agent (MEA) for southeastern Oklahoma, who works within the OK Manufacturing Alliance, a program within the US Department of Commerce. The IAC team members are currently evaluating their list of potential energy-efficiency measures in a variety of end uses, including lighting, compressed air, motors, billet preheating, conveyer drives, arc furnace controls, and process/equipment cooling.

The IAC team views 40 tons of steel scrap on its way to the electric arc furnace.

Molten steel is formed into billet in a continuous-casting process.
Dr. Jennifer Glenn was awarded the 2016 Outstanding Faculty Member for the College of Engineering, Architecture and Technology by the Office of Fraternity and Sorority Affairs at Oklahoma State University. Dr. Glenn is currently a Lecturer in the School of Industrial Engineering and Management at OSU. She is a native of Stillwater and earned bachelor’s and master’s degrees in IEM from OSU.

After graduating from OSU, Dr. Glenn continued her education at the Georgia Institute of Technology where she earned her M.S. in Statistics and a Ph.D. in Industrial and Systems Engineering. She teaches IEM and ENGR courses at the undergraduate and graduate level in the areas of quality leadership, engineering economics, computer programming, and service systems.

In 2012, she was named the CEAT Diversity Faculty of the Year, and she is currently advisor to the Society of Women Engineers. In 2015, she was named the Excellent Young Teacher Award for CEAT by the Halliburton Foundation. Outside of her professional work, Dr. Glenn is active in a variety of civic, church, and charitable organizations.

Dr. Baski Balasundaram conducts research into developing theories and algorithms for mathematical optimization problems involving large-scale networks. He has published over 30 peer-reviewed articles in journals, conference proceedings, and handbooks with his articles having been cited more than 500 times. He has secured more than $3.25 million in competitive research grants and is a co-principal investigator on a $950,000 National Science Foundation grant funding a new supercomputer cluster at OSU. His honors include two Research Excellence Awards from the College of Engineering, Architecture, and Technology, the Award for Excellence in the Teaching of Operations Research from the Institute of Industrial and Systems Engineers, and the Halliburton Outstanding Young Faculty Award.

The Regents Distinguished Research Award recognizes research excellence at Oklahoma State University. Recipients of the award are selected based on the evidence of outstanding and meritorious achievements in research. The awardees must demonstrate a distinguished record of excellence in research and be clearly recognized nationally and internationally.
Hannah Schneeberg
Administrative Assistant

Hannah graduated in May 2016 from the Spears School of Business, at OSU. After five and a half long years and a few majors later, she graduated with a major in Marketing and a minor in Entrepreneurship. Hannah loves coffee, she has a teacup Pomeranian named Baylor, and she will be living on a beach one day as that is her happy place. When pursuing a career after graduation, Hannah felt she was meant to work on campus, especially with students. She loves the atmosphere at OSU and everything that this school has to offer. Hannah’s role in the IEM department is Administrative Support Assistant and Assistant to the Graduate Program Director. Hannah looks forward to the future and working with everyone in this department.

 “…and ‘If the essence of my being has caused a smile upon your face or a touch of joy within your heart. Then in living- I have made my mark.”
-Thomas L. Odem Jr.

Matt Freeman

Matt is currently a member of the outreach committee and has served on the board since 2015. Since graduating from OSU in 2005, Matt has worked for Burns & McDonnell, an engineering, procurement, and construction firm based out of Kansas City. The group that Matt hired into, at the time, traditionally took Mechanical Engineers and taught them Industrial Engineering concepts. Matt broke the mold. He was the first industrial engineer the process group within Burns & McDonnell ever hired. He started out working as a mechanical engineer, designing processing equipment within the oil and gas industry. After a few years, Matt moved into project management and executed refining, gas plant, and fractionator projects across the country. While managing projects, Matt attended graduate school and finished his MBA with an emphasis in finance and investments. The last project he managed was a $1.2 billion LPG export project south of Houston. It was a first of a kind for the United States, and has played a key role in helping the nation work towards exporting more energy to the world. The facility is now up and running, and exports refrigerated propane, butane, and natural gasoline to global markets. After completing the project, Matt took the role as Business Development Manager, and moved back to the Oklahoma City area. In his new role, Matt gets to work with a variety of oil and gas processing companies. Each client is unique, and no project is the same, which makes every day a new challenge. Matt has been happily married to his high school sweetheart for 12 years, and they have three children (Noah is 8, Maebry is 5, and Ava is 6 months old).

“These things I have spoken to you, that in me you may have peace. In the world you will have tribulation; but be of good cheer, I have overcome the world.”
– Jesus speaking in John 16:33
Babak Farmanesh

Babak, a PhD student in the School of Industrial Engineering and Management, was a finalist in the QSR-INFORMS best paper competition. The QSR (quality, statistics, and reliability) section is an interdisciplinary section of INFORMS, the Institute For Operations Research and the Management Sciences. It is comprised of members from industrial engineering, statistics, and business communities from many countries.

This year, the QSR section of INFORMS received twenty-seven student papers. Each paper was evaluated by three to four reviewers. Based on the reviews, four finalists were selected – three from Georgia Tech and one from Oklahoma State.

McKenna Morrison

The Industrial Advisory Board members of IEM awarded McKenna Morrison their first scholarship in the amount of $1,350.

Pictured at right is IAB member Cara Noltensmeyer, along with scholarship recipient McKenna Morrison, and IEM School head Dr. Sunderesh Heragu.

Saeed Piri

Industrial Engineering and Management PhD student Saeed Piri won the Silver Award in the poster competition at HDCC (Harold Hamm Diabetes Center) Research Symposium.

Pictured left is Saeed with his award winning poster.

Congratulations and thank you for your excellent work!
The purpose of Alpha Pi Mu is to recognize students who have achieved academic excellence, promote scholarly activities, and foster an atmosphere to facilitate social interaction between students and faculty. Being a part of Alpha Pi Mu gives an individual scholarship and volunteer opportunities. The society is open to juniors, seniors, and graduate students who meet the membership requirements. Last semester, Alpha Pi Mu inducted the largest group of scholars in chapter history. This semester, Alpha Pi Mu is involved in taking senior class pictures and looking into IEM tutoring opportunities. For more information about Alpha Pi Mu, you can visit their new website at apm.okstate.edu or contact President Bailey Whitman at bailey.whitman@okstate.edu.

APICS

APICS, The premier association for Supply Chain Management (previously the American Production & Inventory Control Society) is an international organization of students and professionals. As the name suggests, all activities of APICS focus on enhancing knowledge and competency in the field of supply chain and operations management. APICS has over 200 professional chapters and more than 150 student chapters across the United States. One of the key factors behind APICS's industry wide recognition is their effort to keep abreast of the latest trends in their core field.

We were excited to launch the APICS OSU Student chapter in the presence of Dr. Pratt, Larry Chadwick (VP Information, APICS OKC chapter), Kunal Gandhi (VP Education, APICS OKC Chapter), IEM faculty members as well as students from the School of IEM. The APICS OSU student chapter is an attempt to broaden the scope of knowledge through industrial training and exposure. It is a great platform to connect industries, network with professional and OSU alumni. One of the core areas of focus for the student chapter will be APICS certifications. It will enhance the knowledge of supply chain & will build the resume due to industry wide recognition of these certifications. There will be many more events and programs that are planned for this as well as for the next semester, including:

- Seminar for APICS Certification Guidance
- Forum for CPIM, CSCP & CLTD Certifications
- Guest Speakers from Industry
- Assessment projects in industry
- Industrial Visits
- Job and internship presentations
- Networking events
- Workshop on resume building & job applications

We would also like to recognize the founder members, officers and Faculty Advisor who launched this student chapter and made it a great success.

Faculty Advisor: Dr. Tieming Liu

Committee Members:
- Pranav Kulkarni, President
- Ashutosh Atre, Secretary
- Sutej Indap, VP Education and Program Planning
- Akshay Nigade, VP Membership
- Kunal Bhosale, VP Finance
- Swaraj Meher, Webmaster

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**Institute of Industrial and Systems Engineers**

The Institute of Industrial and Systems Engineers (previously the Institute of Industrial Engineers) is excited for the start of the semester! Our mission is to enrich the educational experience of the Industrial Engineering student body, provide networking opportunities with industry and other students across the region, and assist in deepening connections across our department.

IISE is looking to provide opportunities for growth for the students within the Industrial Engineering department. To achieve this goal, we have planned and executed several exciting events this year, including:

- IEM Student-Faculty Panel
- IEM Student-Alumni Tailgate
- Guest Speakers from Industry
- Student Internship Presentations
- Company and Plant Tours
- Six Sigma Greenbelt Training

We would also like to recognize the students who freely gave their time and effort to make this organization great. The officers this academic year are:

- James Darling, Senior, President
- Zechariah Shrum, Junior, Vice President
- Stuart Boyes, Junior, Treasurer
- Lindsey Dickerson, Junior, Secretary
- Rachel Chrisman, Senior, Public Relations Director
- Dallas Rehberg, Senior, Assistant Public Relations Director
- McKenna Morrison, Junior, Assistant Public Relations Director
- Sarah Cannon, Events Coordinator
- Bailey Whitman, Assistant Events Coordinator
- Matthew Maakestead, CEAT Student Council Representative
- Pranav Nashte, Graduate Student Representative
- Vandan Patel, Graduate Student Representative
- Arijit Sharma, Graduate Student Representative
- Dr. Sunderesh Heragu, Faculty Advisor

There is a lot going on with IISE, and we would love for you to be a part of it! If you are an alumni or student who would like to get more involved with IISE, please feel free to reach out at our Facebook page, IISE Oklahoma State, or send an email to James.Darling@okstate.edu or zechars@ostatemail.okstate.edu.

**INFORMS**

The Institute for Operations Research and the Management Sciences (INFORMS) is the largest society in the world for professionals in the field of operations research, management science, and analytics. The OSU Student Chapter of INFORMS is a student led campus organization focused on promoting student learning, professional advancement, and camaraderie with fellow students and faculty within the field of operations research and the management sciences. Our goal is to enable students to go beyond the bounds of coursework as they engage in research and extracurricular activities that lay the groundwork for their future as OR/MS professionals. The student chapter officers are in the process of organizing many opportunities for students to participate in INFORMS this semester. Some of the activities include: the IEM seminar series, a workshop on the programming language Python, industry field trip(s), and an end of the year lunch for IEM students, faculty, and staff.

The INFORMS student chapter advisor is Dr. Chaoyue Zhao and the Spring 2017 student officers are:

- Lacy Greening, President
- Hao Pan, President-Elect
- Yajun Lu, Graduate Vice President
- Mohit Khandelwal, Treasurer
- Praveen Kumar Bharathidasan, Secretary
- Abhijyot Bhat, Public Relations Director
- Wendy Lau, Undergraduate Vice President
- Michael Moylan, Activities Coordinator

If you have any questions or would like to connect with the student chapter, please feel free to email Lacy Greening at lacy.greening@okstate.edu or Hao Pan at hao.pan@okstate.edu.
Stochastic simulations are increasingly used to model complex, real-world systems like weather, financial markets, and emergency health care. Not only are the outcomes of such systems subject to uncertainty, for example, the number of people who will be affected by an emerging pandemic [1], but they also have no known functional form. The optimization of such systems, and more importantly, the development of simulation-based methodology that brings about the desired system efficiencies, has become a research area of significant importance.

A large majority of simulation optimization (SO) problems encountered in these real-world scenarios involve integer decision variables. We also routinely encounter problems, especially in health care and manufacturing, where both the objective function and the constraint functions defining the feasible region are estimated via a stochastic simulation. For instance, consider the problem of minimizing the total staffing cost of an emergency care unit while satisfying a prescribed service level (see [2] for a related problem). Then for a suggested staffing policy, both the cost and the service level can only be estimated via a stochastic simulation.

Solutions to such problems, particularly within resource allocation, tend to have binding stochastic constraints. This happens in situations where the objective function pushes the optimal solution against a resource boundary. Ascertaining feasibility of a boundary solution from simulation estimates is a nontrivial challenge [3]. In recent work [4,5], we propose a provably convergent algorithm for this broad class of SO problems.

Instead of seeking a single solution to a constrained optimization problem, decision makers are often interested in identifying several “efficient” solutions to multiple conflicting objectives [6]. For example, in aircraft maintenance scheduling, the objectives could be the minimization of costs associated with the stocking of spare parts and the minimization of the expected number of maintenance jobs that are not completed in time [7].
In ongoing work [8], we propose an algorithm to retrieve the so-called Pareto set of non-dominated solutions to a bi-objective simulation optimization problem by solving several constrained SO problems. This can be achieved in the following way. A single performance measure (for instance, the expected inventory cost) is chosen to be optimized. The remaining performance measure (in the above example, the expected number of incomplete jobs) is then treated as a constraint by imposing strategically chosen upper and lower bounds. Multiple instances of this problem are solved simultaneously by appropriately varying the bounds on the constraint.

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Initiated or active from 2015 to 2017

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Papers published or accepted in 2015, 2016, and 2017


A. Pourhabib, J.Z. Huang and Y. Ding, Short-term Wind Speed Forecast Using Measurements from Multiple Turbines in a Wind Farm, to appear in *Technometrics*.


C. Zhao, Y. Guan, Data-driven Stochastic Unit Commitment for Integrating Wind Generation, to appear in *IEEE Transactions on Power Systems*.


The Cowboy Academy of Industrial Engineering and Management was recently formed at OSU to:

- Recognize the accomplishments of IEM alumni;
- Harness their expertise and talent for advancing IEM so it can continue to produce distinguished alumni;
- Have Academy members serve as role models for current students;
- Help enhance IEM’s visibility;
- Serve as a sounding board for the School; and
- Help with special projects.

The School of Industrial Engineering and Management has been represented and led by many giants in Industrial Engineering, including:

- Presidents, Vice-Presidents, Chief Executive Officers, and Partners of Major Corporations;
- Inventors, Entrepreneurs, Researchers, Philanthropists, and Thought Leaders;
- Members of the National Academy of Engineering;
- Provosts, Deans, Department Heads, and Professors;
- Presidents of the Institute of Industrial and Systems Engineers (IISE), American Society for Quality (ASQ), and Association of Energy Engineers (AEE) Presidents; and
- Fellows of IISE, AEE, APICS, and ASQ.

Members Include:

Tony Bacher  Bill Dueease  Shy Ching Tay
Michael Bartlett  John English  Lyndon Taylor
Terrance Beaumariage  Jack Goertz  Jack Watts
Leland Blank  Don Humphreys  Rick Webb
David Boyer  Behrokh Khoshnevis  Lawrence Whitman
Shay Braun  Rasaratnam Logendran  Marion Williams
Thomas Britton  Kent Powers  Eric Woodroof
Kenneth Case  Jack ReVelle  Stacie Wrobble
Johann Demmel  Ting Nee Su
Congratulations to the 2016 Cowboy Academy
October 8th 2016 Tailgate

IEM hosted two tailgates in Fall 2016. We look forward to hosting another one on September 23rd, 2017. OSU Versus TCU! Save the date!

Bill Dueease, Jon Womack, Sunderesh Heragu, Syam Antony, Dan Crawford, Camille DeYong, Cara Noltensmeyer and Jeff McKnight, tailgating before the big game!

Camille DeYong, Cara Noltensmeyer, and Matt Williams

Go Pokes!

Laura Brown showing her Cowboy Spirit!

IIESE members James Darling, Stuart Boyes, and Lindsey Dickerson, playing at the IEM tailgate
November 12th 2016
Tailgate

Go Pokes!

Michael Hall, Amber Huffman, and Hao Pan grilling burgers

Bailey Whitman, Dallas Rehberg, Sai Thota, Aniket Padwal, and Jonathan Mapemba, signing the tailgate poster

Diana Rodriguez Coca and family
Front cover page photo: The picture on the front cover is the famed Theta pond used at the turn of the century to water OSU’s work animals. It eventually took its name from the Kappa Alpha Theta sorority, then located nearby. Today, the beautiful pond offers the perfect setting for relaxing under a shady tree, talking with a friend, that perfect picture, or watching the ducks.

Back Cover page photo: The picture below is of the Edmond Low Library.

Photo Credits: Bob Ingersoll, IEM alumnus