Cover page photo: Industrial Engineering and Management faculty use state-of-the-art tools and techniques to design and operate a variety of systems, including the automated warehouse, shown on the front cover. Photo courtesy of Savoye Logistics.
We have more exciting news to share. Recently, IEM received word from ABET that our undergraduate program was accredited for another six years. We have been continuously accredited since 1936.

Our students received several awards. Connor Mojo won the Sigma Nu Scholar of the Year award, given to only ten Sigma Nu’s in the world! Ian Giese and Nader Shaker placed second in the John Deere International Institute of Industrial and Systems Engineers (IISE) undergraduate student paper competition in Anaheim, CA. Doctoral student Ronny Pacheco received the John L. Imhoff scholarship from IISE and Master’s student Ankita Khurana received the St. Onge scholarship from MHEFI. Doctoral student Babak Farmanesh is one of four finalists in the 2016 INFORMS Best student paper competition.

Dr. Austin Buchanan placed second in the 2016 IISE Pritsker doctoral dissertation competition. Dr. Chaoyue Zhao placed second in the same competition in 2015. We are also most delighted to announce that Dr. Zhao recently received funding from the National Science Foundation for her project titled “Data-driven, risk-averse models and algorithms for power generation scheduling with renewable energy integration”. This is a collaborative project with Dr. Yongpei Guan at the University of Florida.

For the first time, the incoming IEM freshman class has more women than men! The incoming class has 51% women. The undergraduate population has also increased from 120 in recent years to 160 in Fall 2016! We admitted 39 new MS students in the IEM MS program, 29 in the MS ETM program, and 3 in the IEM PhD program. We have a total of approximately 430 students in the IEM and ETM programs!

We have also had several personnel changes. As noted in the last newsletter, Dr. Hardin joined us in April and Dr. Nagaraj in August. Dr. Cecil has moved to the Computer Science department at OSU. Sarah Lewis who has helped with numerous duties in IEM, including publication of this newsletter, will be pursuing a nursing education and career in Stillwater. She will be missed.

IEM will be hosting a tailgate three hours before the Iowa State game on October 8th in Tent 7 in the International mall. Please stop by and see us if you are in town.

On behalf of the entire School, I am thankful to our alumni for their commitment to the program, even many years after their graduation. As indicated on page 5, there are many ways in which alumni can give back to their alma mater. Three types of giving opportunities are available: student-focused, faculty-focused and program-focused.

Student-focused opportunities include sponsoring study abroad or traditional scholarships – sponsorship of student events, and support of student travel to national conferences. These gifts range from $2,000 to $25,000.

Faculty-focused opportunities include endowing a Professorship or a Chair for $0.5 million to $1 million.

Program-focused opportunities include general department funding in which we recognize donors with their name engraved on a donor wall; billboard and seminar sponsorship; laboratory or student lounge naming opportunities; and endowing the School of Industrial Engineering and Management. Engraving your name on a donor wall cost as little as $1,000. Other giving opportunities range from $15,000 to $20 million.

If you are interested in giving back to IEM and becoming an integral part of the transformation that is taking place in the School and the College, let me know and I will connect you with our foundation specialists.

You can make a gift to the IEM program directly by clicking on the GIVE button available in our website http://iem.okstate.edu.

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**
- IISE conferences, commencement lunches, IAB-student luncheons and IEM reception at annual IISE 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
Brenda Johnson joined the College of Engineering, Architecture and Technology in 1999 and has since served as the assistant director of the M.S. in engineering and technology management program, advising more than 500 distance education learning students through their degree program. Her favorite part of her job is providing personalized service to students and getting to connect with people around the globe on a daily basis. Johnson and her husband Mark own a ranch west of Stillwater where they raise purebred Angus, Charolais and Hereford cattle. Their two daughters, Sydney and Charley, are also involved in the family business and show cattle around the country. In her spare time, Johnson enjoys woodworking, sewing, gardening, photography and graphic design.

“I am always busy, which is perhaps the chief reason why I am always well.”
- Elizabeth Cady Stanton

Jennifer Glenn, Ph. D., is currently a lecturer in the School of Industrial Engineering and Management (IEM) at OSU. She is a native of Stillwater, Okla. and attended Oklahoma State University from 1985 to 1990, earning bachelor’s and master’s degrees in IEM. During her undergraduate days at OSU, Glenn was an active leader in a number of campus activities, including serving as president of the Society of Women Engineers, president of Alpha Pi Mu (industrial engineering honorary) and vice president of Pi Beta Phi sorority. Glenn's awards while at OSU included: Outstanding Senior Female Graduate, College of Engineering, Architecture and Technology (CEAT) Outstanding Engineering Graduate and Phi Kappa Phi, Tau Beta Pi and Institute of Industrial Engineering National Student Award for Excellence.

After graduating from OSU, 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. Following graduation, she worked for Lucent Technologies in Atlanta, Ga., for five years, and then she and her husband, Allen, returned to Stillwater, Okla. to raise their three children. She resumed her professional career in 2011 and currently 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 an advisor to the Society of Women Engineers. In 2015, she received the Excellent Young Teacher Award for CEAT by the Halliburton Foundation. Outside of her professional work, Glenn is active in a variety of civic, church and charitable organizations.

“Life’s most persistent and urgent question is, ‘What are you doing for others?’”
- Martin Luther King, Jr.

“Nothing is easy.”
- Kenneth E. Case
Taylor Mastin is a senior in industrial engineering and management from Mustang, Okla. While here at Oklahoma State, she has served as the president of the Society of Women Engineers and Junior Girl Scout day co-chair. These positions allowed her to introduce young girls and others to OSU and IEM. She also served as president of the Alpha Pi Mu Honor Society. She has completed internships with Eaton, Corp. in Eden Prairie, Minn., and Habitat for Humanity in Anchorage, Alaska. Through these experiences, Mastin found that IEM and all the lessons learned here at Oklahoma State can be applied in many different industries around the country.

“It always seems impossible until it’s done.”
- Nelson Mandela

Ankita Khurana earned her bachelor’s degree in mechanical engineering from G.B Pant University in India and later worked as an industrial engineer with an automobile company, Mahindra & Mahindra Ltd., for three years. During her time at Mahindra, she was an active volunteer working for young girls’ education with Nanhi Kali, an NGO for education of underprivileged girls in India. She joined OSU as a master’s student in IEM in Fall 2015 now works as a teaching assistant under Dr. Jennifer Glenn. She has also been honored with the MHEFI scholarship for the 2016-2017 year. She loves dancing and playing badminton. After graduation, she plans to work in the field of supply chain analytics.

“The only thing that stands between you and your dream is the will to try and the belief that it is actually possible.”
- Joel Brown
John McPherson  
Master’s ETM distance education student

John is from Glendale, Ariz. He received his undergraduate degree in computer science from Baylor University, where he also earned his commission in the U.S. Air Force. He attended the Euro-NATO Joint Jet Pilot Training program at Sheppard AFB, TX, then served as a C-21A formal training unit instructor pilot at Scott AFB, IL. He is currently a C-17A Instructor Pilot in the Fightin’ Fourth Airlift Squadron, Joint Base Lewis-McChord, Wash, where he lives with his wife, Valerie, and their daughter, Emelia. John enjoys flying airplanes, learning new skills, international traveling, motorcycling and spending time with his family.

“‘There’s never enough time to do all the nothing we want to do.’”  
- Bill Watterson

Saeed Piri  
Doctoral student

Saeed Piri is a doctoral student from Iran. He earned his bachelor’s degree from the Amikabir University of Technology (2008) and his Master’s degree from the Sharif University of Technology (2011) both in industrial engineering. He joined the IEM department in 2013. During his attendance at OSU, he has been involved in several activities such as serving as the graduate vice-president of INFORMS-OSU for two years. He has received the Gilbreth Memorial Fellowship (IISE), Distinguished Graduate Fellowship and two other scholarships from the IEM department. Piri is enthusiastic about data analysis and has a passion for identifying interesting patterns in it. He is applying data analytics in the healthcare area and is currently conducting his research under the supervision of Dr. Tieming Liu and Dr. Dursun Delen. In his spare time, Piri loves to brush up on his knowledge and skills by taking courses from Coursera and by reading business related articles. Piri loves traveling, camping and playing golf. He also enjoys listening to music and watching movies.

“The best way to predict the future is to create it.”  
- Peter Drucker
Q&A with Tony Bacher

Tell us a little about yourself
I was born in Tulsa, Okla., and have spent my entire professional career in Tulsa. I had opportunities to leave, but family is very important to me so moving was never really an option. I have been married for 44 years and have three grown children and six grandchildren. All three children have been very successful. I’m trying to encourage the grandchildren to choose OSU.

I received my BSIE in 1970 and my MSIE in 1972. Although I didn’t get an academic scholarship, I did get a music scholarship and participated in the men’s glee club and university choir. This was fun but soon became too time consuming. I played in a rock and roll band during my master’s program and music has continued to be an important part of my life.

I worked in the corporate world from 1972 to 1989. In 1989, I was laid off from Reading and Bates, which turned out to be the best thing that ever happened to me. Oklahoma was in recession and there were few jobs so myself and a partner, another OSU grad, started MBA which was a software development company. That led to founding an internet service provider (ISP) called The WebZone that became the largest privately held ISP in Oklahoma. After we sold both of these companies we started TulsaConnect which provides commercial data center services to both local and regional customers. We sold TulsaConnect to an Oklahoma - based, family-owned telecom group in 2012. I am currently retired and focused on golf, travel and community service.

How have your IEM degrees helped you?
I could not have picked a better degree than IEM for what became my business career. It seemed that each job tapped into some part of the IEM curriculum. My first job after the completion of my MSIE was with Amoco in their audit department. Although I was supposed to be doing operational audits, I soon ended up doing more financial - oriented audits. The accounting and financial courses that I took during my IEM curriculum really helped me. My second job at the Williams Companies involved more traditional IEM projects. After that, I spent the majority of my time in IT - related work. The IEM heavy emphasis on engineering analysis and systematic approaches to projects were invaluable. I don’t know of any degree program that would have prepared me better for a long career requiring varied skill sets.

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 joke about some of our adventures during our time at OSU. One of those friends is Mike Bartlett. He encouraged me to go to the IEM orientation session which led to me selecting IEM as my major. We were fortunate to have many great professors in the IEM curriculum. Several come to mind, but Dr. Wilson Bentley, who was the department head before his tragic death, taught a management class entitled “Functions of the Executive”. At the time, the class seemed a bit abstract, but as I got into the business world, it proved invaluable. Drs. Stevens, Eldin, Shamblin and Estes provided what I would call a solid real-world education that was useful throughout my career. They were all tough but fair, and all were just fun and interesting to be around.

What has motivated you to stay engaged with OSU years after graduation?
I’m a sports fan and have lived through the ups and downs of OSU athletics. Before our children were born, we went to all the football games and many of the basketball games, but once the children were born and had their own games, we had to give up the drive to Stillwater from Tulsa. More recently I have been serving on the Jimmie L. Dean Scholarship Foundation Board which gives four - year scholarships to Oklahoma students attending Oklahoma schools. Many of the students we interview are OSU bound and many are going into engineering. Whenever I have a chance, I advise them to look at IEM as a major because of the experience I have had.

“A man only learns in two ways, one by reading and the other by associating with smart people”
- Will Rogers
Dear OSU IEM Partners,

Greetings from the OSU IE&M Industrial Advisory Board (IAB).

The IAB serves the OSU IE&M community through Student, Faculty, and Alumni outreach, and through providing industry feedback in the ABET Accreditation process. 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 IE&M in this capacity. Please join us in welcoming our new Industrial Advisory Board members:

**Bill Dueease**: Bill earned a Bachelor of Science degree in Industrial Engineering from the University of Alabama in 1967 and a Master of Science degree in Industrial Engineering from Oklahoma State University in 1968. Bill has led a distinguished career which includes experience serving in the United States Army; working in the Energy industry for Phillips Petroleum, Lajet, and Aspen Energy; co-founding the Cardrona Ski Area in New Zealand; running an office supply business; and most recently, founding and managing a career coaching business. Bill currently resides in Fort Myers, Florida.

**Stephanie Royce**: Stephanie earned both a Bachelor and Master of Science degree from Industrial Engineering at Oklahoma State University in 1987 and 1988 respectively. Her career began in the airline industry working for General Electric Aircraft Engines, American Airlines, and Sabre, Inc. Stephanie is currently an Operations Manager at Weamco, Inc, a manufacturer of various pipeline products, and is a doctoral student at OSU’s Watson School of Management PhD program for executives. Stephanie currently resides in Tulsa, Oklahoma.

**Jack Watts**: Jack earned a Bachelor of Science degree in Industrial Engineering at Oklahoma State University in 1970 and an MBA from Stanford University in 1972, and then later obtained Masters and Doctorate degrees in Archaeology from Oxford University in 2002 and 2013. Jack has held a number of senior roles, including serving as Chairman and COO at Flextronics, Inc; Founder, Chairman, and CEO of Faraday Electronics, Inc; and Chairman and CEO of Portola Packaging, Inc. Jack is currently a Partner at The Portola Company and lives in San Francisco, California.

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**Members**

- **Syam Anthony**: Wal-Mart Stores, Inc.
- **Ashley Estes**: Michelin North America
- **Cara Noltensmeyer**: Devon Energy
- **Matt Turner**: Enbridge
- **Dan Crawford**: Power Costs, Inc.
- **Matt Freeman**: Burns & McDonnell
- **Abhijit Rajput**: CEVA Logistics
- **Jack Watts**: The Portola Company
- **Stephanie Criner**: Lockheed Martin
- **Jack Goertz**: Tandem, Ltd
- **David Reed**: Webco Industries
- **Johnathan Womack**: JPMorgan Chase & Co.
- **Bill Dueease**: The Coach Connection
- **Jeff McKnight**: SCIFIT Systems, Inc.
- **Stephanie Royce**: Weamco
Dr. Austin Buchanan

Dr. Austin Buchanan, Assistant Professor in the School of Industrial Engineering and Management, placed second in the Institute for Industrial and Systems Engineer’s Pritsker Doctoral Dissertation competition. His dissertation completed at Texas A&M University is titled “Parameterized Approaches for Large-Scale Optimization Problems.” The Pritsker Doctoral Dissertation Award recognizes outstanding research in industrial engineering. Dr. Buchanan has published six articles, one of which was selected as the May 2015 INFORMS President’s Pick article.

Dr. Chaoyue Zhao

In 2015, Dr. Chaoyue Zhao also took 2nd place in the Pritsker Doctoral Dissertation Award for her dissertation entitled “Data-Driven Risk-Averse Stochastic Program and Renewable Energy Integration.”

IEM held their Fall 2016 bell ringing ceremony on September 6th, 2016. Students, faculty, staff and advisory board members including Daniel Anderson, Baski Balasundaram, Austin Buchanan, Terry Collins, James Darling, Ken Case, Megan Hughes, Ankita Khurana, Sarah Lewis, Chinnatat Methapatara, Zhuqi Miao, Kalyani Nagaraj, Ronny Pacheco, Arash Pourhabib, David Reed and Chaoyue Zhao were recognized for various awards and honors received during the summer and early Fall of 2016.
Spring

Jan. 13: Advanced Manufacturing of the Next Generation Biofuels: Feedstock Preprocessing, Dr. Meng Zhang, Kansas State University

Jan. 20: New Additive Manufacturing Process Development for the Fabrication of Functional Components, Mr. Xuan Song, University of Southern California

Jan. 22: Stochastically-Constrained Simulation Optimization On Integer Lattices, Dr. Kalyani Nagaraj, Purdue University

Feb. 3: Enhancing Process Understanding in Genetic Manufacturing Systems Using Modeling and Simulation, Mr. Gregory Purdy, Virginia Polytechnic Institute and State University

Feb. 8: Simulation Optimization: Black and White Box Approaches to Solve Stochastic Optimization Problems, Dr. Giulia Pedrielli, National University Singapore

March 23: Emerging and Continuing Trends in Worldwide Logistics, Dr. Don Taylor of Virginia Polytechnic Institute and State University

Fall

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

Aug. 31: Disruption Control with Crew Recovery, Dr. Sujeerva 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.
Welcome and congratulations! We look forward to getting to know all of you and helping you on your way to becoming successful industrial engineers!

OSU held its Spring 2016 commencement ceremony on May 6th and 7th. 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, Master of Science in Engineering Technology Management or Doctorate of Philosophy.

Undergraduates:
- Daniel Anderson
- Kate Bernhardt
- Alej Carstens Cattori
- Dilin Chen
- Nicole Claros
- Kyle Crawford
- Megan Dougla
- Lacy Greening
- Katelyn Hudson
- Shuangnan Li
- Rohit Mishra
- Connor Mojo
- Hao Pan
- Carly Reaves
- Andrew Rillo
- Jessica Robertson
- Shuai Shao
- Kimberly Sookbang
- Thompson Thomas
- Claire Van Beek

Master’s Graduates:
- Pratik Borse
- Anand Chitte
- Onkar Jadhav
- Arun Jayaraman
- Prashant Kalidindi Verma
- Kavin Karappadi Kalaivadhanan
- Hrishikesh Kardile
- Amit Kumar
- Naveen Kumaresan
- Dinesh Babu Nallasamy
- Vamsi Krishna Palaveri Chakravarthy
- Bharathveer Panduga
- Amit Pradhan
- Manish Shinde
- Amod Shirke
- Vinesh Somalaraju
- Ryan Thompson
- Uttara Tipnis
- Siddharth Tripathi
- Pushkar Vartak

ETM Graduates:
- Lemuel Bethume
- Scott Brenner
- James Bryant
- Kenneth Candiotti
- Joseph Cha
- William Harrison
- Lucas Just
- Daniel Klepper
- Stuart Meyers
- Chad Nimrick
- Racheal Olayoriju
- Vai Schierholtz
- Giulia Seikel
- Christopher Valencia
- Derek VanDeWege

Doctorate Degree:
- Hao Pan
- Hosseinali Salemi
- Hamidreza Validi

Good luck in all your future endeavors!
What do you think the future holds for the IEM student?
The world is a tougher world to navigate than when I started working in 1972, but the future is bright. Technology is changing rapidly to the point that in a short period what was today's new technology is old news. IEM graduates must be perpetual students and be willing to adjust to new innovations quickly. The good news is the IEM education they will receive uniquely prepares them with a dose of engineering and business skills that will allow them to adapt to these changes.

What are a couple of highlights of your career?
There have been many highlights to my career but a couple stand out. I mentioned our company, MBA, which developed software for the IBM AS/400. IBM approached us about licensing our backup and recovery software to use as their worldwide backup software for the AS/400. IBM sent a team of management and lawyers to our office to negotiate the contract. They were sending more people to negotiate the contract than were in our entire company (4 at the time) so we hired temps to come in and sit at several computer work stations so we would look larger. We successfully negotiated the contract, completed the project, and the software, although much different now, is still in use by IBM. Another highlight was when IBM approached us after 4 years to buy our backup software. We used a very sage attorney to negotiate the contract with IBM. They made us an offer that I thought was outstanding but our attorney acted insulted at the offer. It is a long story - but we ended up with nearly twice as much as their initial offer. One other quick highlight pertains to our ISP, The WebZone. The idea to start this company was my son's idea. We came up with a plan to start the company in April of 1996 and hoped to have 400 customers by the end of the year. We went to the Tulsa Business and Technology showcase in late April with our new company idea and had almost 400 customers by the end of the second day. That number grew to 13,000 when we sold the company in 1999.

Why is international exposure important for today's engineers? How would they benefit from availing of study abroad opportunities?
I have never been exposed to international business opportunities but there is no doubt that with the explosion of the Internet we are only a keystroke away from opportunities all over the world. Understanding the thinking, the culture and the motivations of those outside our country would be useful. I will say however, that I hope our young engineering students will stay in Oklahoma and help make it a goal to improve our state. So often our best and brightest go elsewhere and I find that a troubling trend.

What do you think the future holds for the IEM student?
The world is a tougher world to navigate than when I started working in 1972, but the future is bright. Technology is changing rapidly to the point that in a short period what was today's new technology is old news. IEM graduates must be perpetual students and be willing to adjust to new innovations quickly. The good news is the IEM education they will receive uniquely prepares them with a dose of engineering and business skills that will allow them to adapt to these changes.
Unlock your potential

MSETM = the KEY to advancement

- 100% online - no on-campus requirement
- Learn on your schedule
- No GRE/GMAT required
- Military friendly
- Flexible curriculum
- Applications accepted year-round
- Large alumni network

MSETM Program  etm.okstate.edu
101 Engineering North | Stillwater, OK 74078 | 405-744-2337 | msetm@okstate.edu
In May 2016, Industrial Engineering and Management (IISE) members of the Oklahoma State University student chapter attended the 2016 Annual Conference and Expo in Anaheim, CA at the Disneyland Hotel and Resort where they attended and hosted presentations, seminars and networking receptions to enhance their careers. They also met a few Disney stars!

Go Pokes! Annual IISE conference in Anaheim, CA

Dr. Jack ReVelle, IEM alumnus, delivering a keynote address at the Annual IISE conference in Anaheim, CA in May 2016

IEM students with Minnie in Anaheim
IEM held their Spring 2016 commencement luncheon on Saturday, May 7 at Meditations Catering & Banquet Facility. Nearly two hundred guests including graduating BS, MS and PhD students and their families were in attendance along with faculty and staff from IEM as well as Dr. Raman Singh, the Associate Dean for the College of Engineering, Architecture, and Technology.
Who’s New in IEM

Jonathan Mapemba
Student Worker

Jonathan is a Freshman majoring in Management Information Systems. He is a hard working person who always enjoys any challenge presented to him. He is always determined to get the task done no matter what road blocks he meets and tries to get it done in the fastest and most efficient way possible. Jonathan is always happy and is able to see the brighter side of the darkest things and is very passionate at what he does. He is goal oriented and always wants to achieve that goal. Jonathan doesn’t want to take any loss and is always looking for a way to win.

“Because people don’t have wings, we look for ways to fly”
-Haruichi Furudate

Michael Hall
Student Worker

Michael Hall is from the small town of Drumright, OK. He is a “super” senior pursuing a History degree with minors in geography and anthropology. Michael enjoys traveling, learning, and being with family and friends. His career plans includes obtaining his Masters in Archaeology and travel the world. Michael started working in the IEM department this fall and absolutely enjoys it.

“Once you’ve accepted your flaws, no one can use them against you.”
-Tyrion Lannister
Connor Mojo who graduated from IEM Spring 2016, was awarded the Sigma Nu Scholar of the Year award. This award recognizes the individual who has demonstrated excellence in the area of Scholarship. He was also honored as an Alpha member which is given to the top 10 Sigma Nus worldwide. One of only 630 recipients in the fraternity’s history, this is Sigma Nu’s highest possible honor for graduating Seniors. The chapter flew him to their convention in San Diego where he was able to accept the awards personally.

“I owe a great deal to Sigma Nu. Immediately as a Freshman I was mentored by Sigma Nu members who showed me how to serve whole-heartedly, love unconditionally, and to always give my best. Receiving such a high honor from Sigma Nu is a testament to the OSU Epsilon Epsilon chapter, to my parents, and to all the amazing opportunities and experiences Oklahoma State has provided me during these four years.”

Ian Giese (right) won the first place at the Southcentral regional student paper competition in Manhattan, KS

Ian Giese and Nader Shaker placed second at the John Deere International IISE Student paper competition with their paper titled, “An Investigation into the Receiving Operations at Ditch Witch.” Congratulations to them, Dr. Collins and Dr. Nazemetz.

IEM Students have placed first, second or third in the IISE South Central Regional Student Paper Competition six of the past eight years. They have placed first, second or third in three of the six years at the International John Deere student paper competition.

Congratulations and thank you for your excellent work!
INFORMS

Institute for Operations Research and Management Sciences (INFORMS) is a professional organization which brings together professors, students, industrial practitioners and researchers in the fields of operations research, analytics and many more specializations. INFORMS provides its members research, career and networking opportunities. The OSU student chapter of INFORMS includes nine officers from the School of Industrial Engineering and Management and the Department of Management (in the Spears Business School). The OSU INFORMS student chapter has been conducting numerous activities each year in order to benefit students. These activities include: brown bag seminars, software workshops for students, field trips and interactive sessions with representatives from industry. INFORMS-OSU has attained national recognition with its continuing efforts in student development. INFORMS has recognized the efforts of this student chapter each year by presenting it with prestigious awards, including Cum Laude and Magna Cum Laude.

The Fall 2016 team has 8 officers (3 undergraduate and 5 graduate students) working under the supervision of Dr. Chaoyue Zhao. This team has been conducting IEM seminar series and intends to hold a workshop and a picnic event. For more information, please contact INFORMS President Babak Farmanesh at babak.farmanesh@okstate.edu. Do not forget to like our new Facebook page (Informs Student Chapter - Oklahoma State University).

Alpha Pi Mu

Industrial Engineering Honor Society

The purpose of Alpha Pi Mu is to recognize those 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. This semester, Alpha Pi Mu is involved in taking senior class pictures and is looking into IEM tutoring opportunities as well. Alpha Pi Mu is also planning to have goodie bags made for IEM students during finals week. For more information about Alpha Pi Mu, you can visit their new website at apm.okstate.edu or contact President Sarah Cannon, sarah.cannon@okstate.edu.

Institute of Industrial & 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 several exciting events planned for the semester, 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'd also like to recognize the students who freely give of 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, Senior, Assistant Public Relations Director
- Sarah Cannon, Events Coordinator
- Bailey Whitman, Assistant Events Coordinator
- Matthew Maakestad, CEAT Student Council Representative
- Pranav Nashte, Graduate Student Representative
- Vandan Patel, Graduate Student Representative
- Anijit 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.
In recent years, the untapped resource of big data has introduced an ongoing revolution in the real-world applications such as healthcare, marketing, advanced manufacturing, business intelligence, and information technology. Through an intelligent use of this resource, machine learning enables computers to become fundamentally smarter and more powerful. Some applications include self-driving cars (Google), financial fraud detection (IBM), speech recognition (Microsoft), and recommender systems (Netflix, Amazon). Machine learning research is tied closely with optimization formulations and theory. Consequently, the emerging developments in the field of machine learning have provided a broad arena for future research on the large scale, nonlinear, stochastic, and distributed optimization algorithms. In this article, we present a few classes of such optimization models and discuss some of the arising challenges associated with the design and analysis of the optimization algorithms.

Empirical risk minimization: Given a large scale training set including input objects and their associated output values, the goal in these problems lies in learning a function (e.g. a hyperplane in linear regression) that can be employed in order to classify new observations. The resulting model is cast via a large scale optimization problem where the objective function is an empirical average of a suitably defined loss function.

The choice of the loss function is tied closely with the problem of interest. For instance, in binary classification problems where the output takes binary values, the hinge loss function and the logistic regression loss function appear among the popular choices.

Distributed optimization over large networks: In many network applications, there is no central access to the information associated with the entire system. Due to this lack of global network topology, the resulting optimization problems over networks are cast as distributed optimization models, where the goal is to minimize the sum of a large number of component functions such that each component is associated with an agent (e.g., internet user, sensor). Due to the distributed structure of the problem, each agent has access only to the information of its own objective function. An instance of this structure is the distributed regression problem in sensor networks.

Consider a network of sensors collecting measurements of time-invariant global phenomena. In this setting, a model function determines the parametric relation between the sensors and their measurements. The goal
is to minimize the sum of the model functions associated with the sensors and find the best solution that describes the global phenomena [4]. An example is the underwater gas pipeline leakage source localization problem.

During the past two decades, there has been a growing interest in developing efficient optimization algorithms for solving the emerging large scale optimization problems. For instance, incremental first order and second order methods [4, 2] have been developed to address large scale machine learning and distributed optimization problems.

Stochastic gradient and subgradient methods [5, 6] and their mirror descent generalizations have been very successful in solving optimization problems in uncertain regimes. Block coordinate gradient methods and their accelerated variants were developed to address separable, nonsmooth, and regularized problems. Online quasi-Newton methods and their limited memory variants were employed in solving large scale L2 regularized stochastic optimization problems.

Despite the widespread use of the aforementioned methods, one of the challenges associated with the state-of-the-art optimization schemes is contending with ill-posed problems. The term ill-posed refers to problems where the optimal solution lacks a desirable property such as stability, sparsity, or uniqueness. A widely appreciated remedy to address such problems is the regularization technique. The goal in regularization is to construct an approximate well-posed problem that is characterized with a regularization parameter and a norm operator. The optimal solution to the well-posed problem possesses the desired properties, while it deviates moderately from the true solution. Importantly, employing this classical regularization technique, there is no theoretical result in the literature on the complexity bounds of the existing optimization methods in solving the original ill-posed problem. Motivated by this gap, in a recent work [8, 7], we considered stochastic quasi-Newton (SQN) methods to solve ill-posed optimization problems. We developed an exact regularized SQN method (ER-SQN). In this scheme, both the gradient mapping and the Hessian approximation matrix are regularized at each iteration and updated in a cyclic manner. Under suitable assumptions on the stepsize and regularization parameters, we showed that the algorithm generates a sequence converging to the optimal solution of the original ill-posed problem. Importantly, we derived a complexity bound on the error of the algorithm in terms of the objective function's values. Our empirical analysis on a binary classification problem shows that the proposed scheme performs well compared to both classical regularized SQN (R-SQN) [3, 1] and stochastic approximation (SA) schemes. Fig. 1 (left) illustrates this comparison. In an ongoing research project, our efforts are geared towards the development of an exact L1 regularized incremental aggregate gradient method (ER-IAG) addressing large scale ill-posed optimization problems. Our preliminary simulation results on a large scale text categorization problem (with 140,000 variables) seem promising (see Fig. 1).

Bibliography

Initiated or active in 2015 and 2016

D. Brunson, B. Balasundaram, M. Borunda, C. Fennell, P. Hoyt, MRI: Acquisition of Shared High Performance Compute Cluster for Multidisciplinary Computational and Data-Intensive Research, National Science Foundation, 10/1/2015–9/30/2018, $951,570.


J. Nazemetz, Motorcycle Crash Causation Study, United States Department of Transportation- Federal Highway Administration, 2012 - 2016, $3,531,600.


C. Zhao and Y. Guan, Data-driven risk-averse models and algorithms for power generation scheduling with renewable energy integration, National Science Foundation, 10/1/2016–9/30/2019, $400,000.
Published or accepted in 2015 and 2016


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*. 

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Associate Professor

Dr. Farzad Yousefian
Assistant Professor

Dr. Chaoyue Zhao
Jim and Lynne William Assistant Professor
Jeff McKnight

Jeff is currently secretary for the IAB and has served on the board since 2011. Since graduating from Oklahoma State in 1993, he has worked primarily in industries and organizations with little industrial engineering presence. This has provided him with the opportunity to educate others about industrial engineers and show how they can help organizations achieve their goals. For the last 18 years, Mr. McKnight has worked in the Health and Fitness Industry. During this span, he has been applying industrial engineering and process improvement principles in engineering, manufacturing, customer service call center operations, warehouse management, logistics and quality. For the last six years, he has been engineering manager for SCIFIT, leading all engineering, quality and customer service activities. SCIFIT is a fitness equipment manufacturer that targets the rehabilitation and active aging markets by making products that accommodate all types of users, regardless of physical limitations. A year ago SCIFIT was acquired by the Brunswick Corporation and SCIFIT became part of the Life Fitness family of products, which also includes Hammer Strength and Cybex. Mr. McKnight is now plant manager for the Tulsa facility.

Leadership is not about titles, positions, or flowcharts. It is about one life influencing another.” – John C. Maxwell – My industrial engineering education has allowed me to always be a leader, even if I was not necessarily in a leadership role.

IEM students at the Textron Aviation plant in Wichita, KS

A few of the sixteen May 2016 B.S. graduates
IEM students Babak Farmanesh, Lindsey Dickerson, McKenna Morrison, Stuart Boyes, James Darling, Michael Vestal, Zech Shrum and Rachel Chrisman carrying second place winner Ian Giese at the Annual IIESE Awards ceremony in Anaheim, CA