

DEPARTMENTAL NEWS

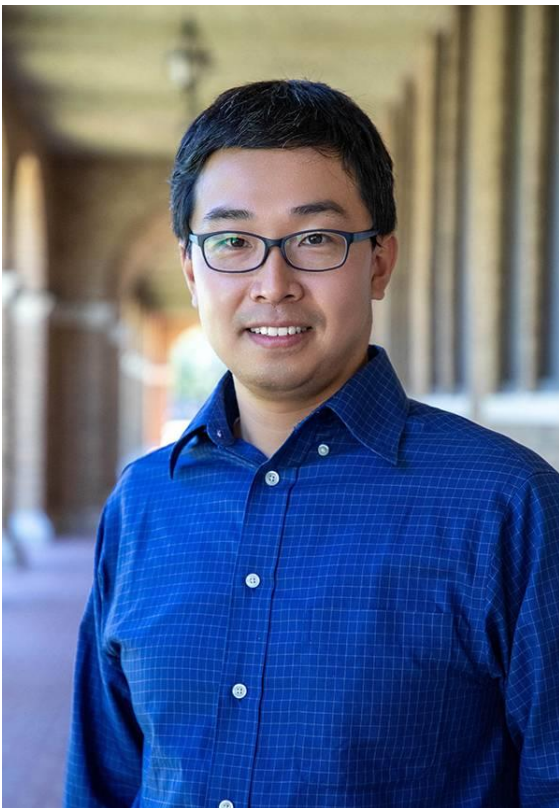
<https://www.depts.ttu.edu/imse/index.php>

IMSE - YOUR FAVORITE ENGINEERING NEWS

IMSE Summer 2023 Newsletter

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Dr. Weilong Cong receives Grant from DOD Army Research



Congratulations to Dr. Weilong Cong! We are excited to announce that Dr. Cong has been awarded a prestigious grant of \$799,831 from the DOD Army Research Office. This award recognizes Dr. Cong's outstanding research proposal on the Ultrasonic Vibration-Assisted Laser Additive Manufacturing of Structural Materials project.

Dr. Cong, your dedication and expertise in the field of engineering have not only contributed immensely to Texas Tech and the IMSE, but also to the broader scientific community. Your research is paving the way for innovative advancements in manufacturing and systems engineering, and we could not be prouder to have you as a member of our esteemed faculty.

By securing this significant grant, you have not only demonstrated your exceptional capabilities but also showcased the immense potential of our university in cutting-edge research. Your continued efforts inspire us all and exemplify the spirit of Texas Tech's research mission.

Madison Smith receives Harold and Inge Marcus Scholarship



We are thrilled to announce that IMSE student **Madison Smith** has been awarded the Institute of Industrial and Systems Engineers prestigious Harold and Inge Marcus Scholarship for her exceptional work in the field of industrial and systems engineering!

Madison's outstanding academic performance and her contributions to the development of the industrial and systems engineering profession have earned her this highly coveted award. We couldn't be prouder of her achievements, and we are confident that she will continue to make significant contributions to this field.

Madison's dedication and hard work are truly inspiring, and she serves as a shining example of what is possible when you combine passion with excellence. Her commitment to advancing the future of industrial and systems engineering is commendable, and we know that she has a bright future ahead of her. Well done Red Raider!!!

Asif Amed receives the Marvin Mundel Memorial Scholarship



Asif Ahmed, a dedicated student here at TTU IMSE has been awarded the prestigious Marvin Mundel Memorial scholarship for the 2022-2023 school year. The scholarship, presented by the Institute of Industrial and Systems Engineers is awarded to students who present exceptional academic performance, leadership skills, and a passion for the ISE profession.

Asif Ahamed is a shining example of the excellence and dedication that IISE seeks to promote in the ISE profession. We look forward to seeing all that he will achieve in the future. Congratulations, Asif, on this well-deserved recognition!

Drs. Cross, Cargile Cook, and Beruvides receive National Science Foundation grant to study doctoral student identity formation.



Three faculty at Texas Tech University recently received a grant from the National Science Foundation (NSF) to study the process through which engineering doctoral students form their identity as researchers. Dr. Jennifer Cross, associate professor of Industrial, Manufacturing and Systems Engineering (IMSE) in the Edward E. Whitacre Jr. College of Engineering, is the principal investigator, and the co-investigators are Dr. Kelli Cargile Cook, professor and chair of professional communication, and Dr. Mario Beruvides, AT&T professor of IMSE. In addition, the investigators will be hiring graduate students to assist on the project.

The goal of the project is to address current research gaps in the process of engineering doctoral student identity development by implementing a longitudinal study at a large state university.

It will explore the application of user experience (UX) methods as a novel research approach to generate new insights on the process/processes through which engineering doctoral students develop (or fail to develop) their identities, specifically as researchers. It uses phenomenological data analysis as its analytical framework.

Understanding researcher identity, the personal identification with the critical knowledge and responsibilities associated with the role of being a successful researcher, is an important focal point in both the education and management of engineering doctoral students. Yet, knowledge of the process by which doctoral students develop their professional identity is limited. This study addresses, evaluates, categorizes, and systematizes several critical areas of concern regarding professional identity formation, including professional experiences, gender, ethnoracial background, identity formation process, and critical “self-referential” identifiers.

The findings can assist educators in the development of researcher identity of individuals who are new to the engineering research endeavor, and may help improve student mental health, decrease attrition rates, and bridge the gender and ethnoracial gaps in graduation rates.

Of particular interest are three key gaps: 1) the limited existing longitudinal research on the topic of researcher identity development; 2) the limited existing research on researcher identity development in doctoral students, and 3) the limited existing research on the process of researcher identity development. Further, no previous research has addressed potential differences in identity development between on-campus and online doctoral students. With the growing popularity of online graduate engineering education, and opportunities to further expand access through additional online engineering doctoral programs, examination of researcher identity in online doctoral students is of particular interest. In pursuing these aims, this research will create great benefit for students, educators, and researchers.

Dr. Christian Dieling, an alum of TTUIMSE, has received the TTU Graduate School's Outstanding 1st place Doctoral Dissertation Award.



Dr. Christian Dieling, an alum of TTUIMSE, has received the TTU Graduate School's Outstanding 1st place Doctoral Dissertation Award for his dissertation titled, "Techniques for Calibration of Halipad Material." Dr. Dieling's major advisor was Dr. Mario Beruvides. The graduate school recognizes thesis and dissertations of mathematics, physical sciences, engineering, and social sciences in even-numbered years, and biological and life sciences, humanities, and fine arts in odd years. Dr. Dieling's dissertation will now be entered into the Council of Graduate School's annual CGS/ProQuest Distinguished Dissertation Award competition, which honors the dissertations that represent original work and significant contributions to the discipline considered.

Advanced Manufacturing Research and Education Symposium, Honoring Dr. Hong-Chao Zhang.



The Advanced Manufacturing Research and Education Symposium took place on April 22nd in honor of the 31-year research career of Dr. Hong-Chao Zhang, who retired from the IMSE Department in December of 2021. This one-day symposium focused on manufacturing research and future directions.

Dr. George Tan Receives NSF Career Award



Dr. George Tan, Assistant Professor of the TTU IMSE received the very prestigious NSF CAREER award. Dr. Tan's project is titled "Capillary-Incorporated Bioprinting of Biomimetic Soft Tissue Constructs".

This CAREER award project aims to develop and characterize a novel bioprinting technology to create three-dimensional biological constructs integrated with capillary vessels to repair or replace damaged soft tissues. The outcomes of this research will pave the way toward novel manufacturing solutions for complex diseases and bioinspired therapies that can advance regenerative medicine.

The education-outreach activities of this project will equip the students with multidisciplinary skills for bioinspired design and manufacturing and foster a thriving ecosystem of biofabrication in west Texas. Overall, this project will contribute to sustaining America's global leadership in advanced manufacturing and biomedicine.

"The CAREER Program offers the NSF's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization." – NSF.

Dr. Tan received his Ph.D. in Industrial Engineering from North Carolina State University in 2015 and joined the IMSE Department at TTU as an Assistant Professor in the fall of 2016. His research focuses on advanced manufacturing processes for biomedicine, including electrospinning, hybrid bioprinting, and direct-write photolithography.

Dr. Tan has made multiple original contributions in developing biomimetic scaffolds for musculoskeletal tissue regeneration, antimicrobial implantable devices, and fouling-resistant water filtration systems. He is also leading an NSF-sponsored education project focusing on transformative pedagogical strategies for biomedical innovation to catalyze the interdisciplinary collaboration between engineering students and medical students. To date, he has published over 50 refereed research papers and 2 book chapters.

Dr. Chowdhury Receives A Grant To Develop A Helmet That Will Keep Law Enforcement Safe.



The **U.S. Department of Homeland Security (DHS)** has awarded a \$994,591 grant to Dr. Chowdhury for a study to develop a mission-adaptive, multipurpose helmet for the law enforcement (LE) officers and first responders. While responding to active shooter responses, civil disorders, or motor vehicle patrol situations, LE officers and first responders are vulnerable to a wide range of head injuries, including concussions, in various ways. Hence, a state-of-the-art LE helmet needs to provide concussive force and ballistic protection and be modular to provide mission-adaptability through the addition of functional accessories, such as communication devices, lighting equipment, body camera, and face shield in modern crowd control operations.

By combining the principles and methods from four major areas—reverse engineering, materials design, injury biomechanics, and human factors—Dr. Chowdhury and his team will develop a multipurpose, user-centered LE ballistic helmet by optimizing four key design features: 1) maximizing the thermal balance underneath the helmet shell for the prolonged wear, 2) maximizing the helmet positional stability during dynamic movements, 3) identifying a safe envelope of weight and center of mass (i.e., weight distribution) that can be supported by both young and older police officers, and 4) minimizing the concussion threat by designing a novel suspension padding system attenuating the shock wave propagation of both linear and angular ballistic impacts.

In 2021, Dr. Chowdhury was also awarded a \$562,253 grant from the DHS to determine injury-mitigating ergonomic design solutions in order to develop a first-of-its-kind NextGen firefighting helmet that will provide both fire and ballistic protection.

His current research focuses on finite element modeling and simulation of traumatic brain injury, musculoskeletal health biomechanics, virtual reality applications in rehabilitation engineering, and helmet, exoskeleton, and prosthetic designs. He is currently serving as the Chair-Elect of the Occupational Ergonomics Technical Group of Human Factors and Ergonomics Society for the 2020 – 2022 term. Join us in congratulating Dr. Chowdhury!

Congratulations to one of our outstanding TTU IMSE Ph.D. students, Dongzhe Zhang, for receiving the Paul Whitfield Horn Distinguished Professors Award at Texas Tech University.



Only 4 winners are awarded across the entire university. We are very proud to recognize Dongzhe’s intensive research regarding laser additive manufacturing of shape memory materials, as well as 9 published journal articles and 6 conference papers. Dongzhe Zhang is an exceptional scholar cultivated here at Texas Tech IMSE. Way to Go Red Raider!

Congratulations to Order of the Engineer inductees from the TTU IMSE



Each initiate was given a stainless-steel ring to place on their fifth finger accepting the Obligation of an Engineer. Initiates agree to uphold the standards and dignity of the engineering profession and to serve humanity by making the best use of Earth’s precious wealth.

The Order of the Engineer was initiated in the United States in 1970 to foster a spirit of pride and responsibility in the engineering profession, to bridge the gap between training and experience, and to present to the public a visible symbol identifying the engineer.

Again, congratulations to IMSE student Order of the Engineer Inductees. Way to go Red Raiders!

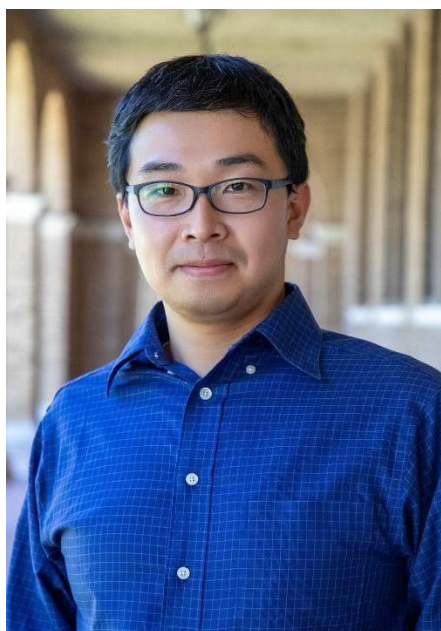
Dr. Changwon Son recognized by the National Academies' Gulf Research Program.



Texas Tech University's Changwon Son, an assistant professor of Industrial, Manufacturing, And Systems Engineering (IMSE) in the Edward E. Whitacre Jr. College of Engineering, was one of six scientists selected for the Offshore Energy Safety track of the Early-Career Research Fellowship, the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine announced last Thursday, January 20.

Read more: <https://www.kcbd.com/2022/01/24/ttu-faculty-member-recognized-by-national-academies-gulf-research-program/>

Dr. Weilong Cong received a National Science Foundation Grant.



Dr. Weilong Cong received \$342,861 from the NSF for his project "Microfeature Fabrication in Brittle Materials Using Rotary Ultrasonic Micro-Machining". This project aims to conduct research on high-quality microfeatures fabrication of brittle materials without creating large chipping damage and heat-related oxidation. This project is to generate fundamental understandings of tool and workpiece behavior in rotary ultrasonic micro-machining to enable an effective, efficient, and high-quality microfeature mechanical grinding process for brittle materials.

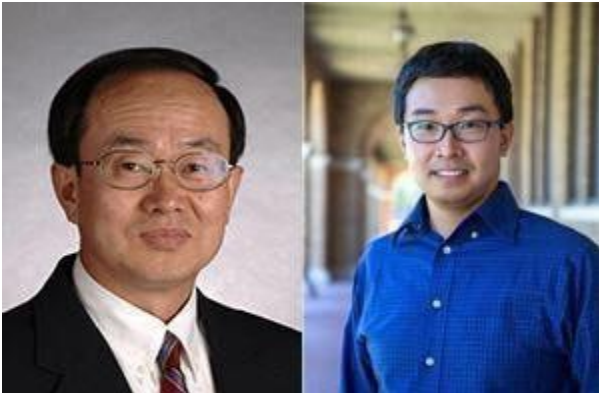
Read more: <https://today.ttu.edu/posts/2021/12/Stories/Engineering-Professor-to-Study-High-quality-Micromachining-of-Brittle-Material>

Young Adult Volunteer Award Given to IMSE Post-Doctoral Researcher.



Anurud Rankoth, Post-Doctoral Researcher for Bryan Norman, Ph.D. and Chair of the Department of IMSE, recently received the Young Adult Volunteer Award from the Volunteer Center of Lubbock at the center's recent 25th annual luncheon. Anurud is recognized for his work in organizing volunteers for the COVID vaccination clinics that occurred on the Texas Tech University Campus. He played an essential role in getting West Texas back up on its feet during the COVID-19 pandemic by coordinating large mobile clinics and recruiting the necessary volunteers to get people in West Texas vaccinated. We are excited and proud that Volunteer Center of Lubbock has recognized this outstanding student's service in making our community safe and healthy. Congratulations Anurud!

Texas Tech Faculty Members Rank Among Top 2% of Global Researchers.



Congratulations to Drs. Hong-Chao Zhang and Weilong Cong for making the list of most cited researchers in the world! We are grateful for his research contributions and service to our university and department.

Read more:

<https://today.ttu.edu/posts/2021/12/Stories/Texas-Tech-Faculty-Members-Rank-Among-Top-Global-Researchers>

Olufunke Oladimeji Receives American Society of Engineering Management Best Dissertation Award.



The Department of IMSE has won 5 of the 18 American Society for Engineering Management Best Dissertation Awards ASEM ever awarded. There is only one award given annually and nominations are international. We would like to recognize Olufunke Oladimeji, who received this distinguished and international honor at Texas Tech University for 2020, with the dissertation title: “A Dynamic Analysis of the Success Factors that Affect Performance Measurement Implementations.” Jennifer A. Cross, Ph.D., and Heather Keathly, Ph.D. University of Central Florida, were Dissertation Co-Chairpersons.

Oladimeji currently serves the College of Charleston as an Instructor/Director of Engineering Programs: “My primary role is to teach engineering and physics instruction to students enrolled in the course area. I provide curriculum development and assessment plans for the engineering programs toward the university continuous improvement plans and towards an ABET accreditation. My role also involves research and advising. I am a part of the community outreach programs to grow the Engineering program.”

Dr. Suman Chowdhury Conducts Firefighting Helmet Research.



Researchers at the Texas Tech Department of Industrial Manufacturing, and Systems Engineering program are reinventing giving a Next Gen upgrade to the iconic design and traditional materials of today’s firefighter helmet through a generous grant from the United States Department of Homeland Security. Dr Suman Chowdhury and his research team are seeking out fire departments throughout the United States who wish to participate in this first of its kind innovation upgrade of the firefighter helmet. The teams’ research and prototype fabrication will focus on heat resistance utilizing the latest state of the art materials and technology combined with the latest military grade ballistic protections along with existing communication and lighting systems.

Read more:

<https://www.everythinglubbock.com/news/local->

Dr. Suman Chowdhury Represents IMSE for the Explore Engineering Summer Camp.



Last week, **Dr. Suman Chowdhury** represented IMSE as an instructor for the Explore Engineering Summer Camp hosted by the Engineering Opportunities Center. The camp provided the opportunity for high school students to live life as Texas Tech Engineering students, including staying in the dorms for a week! As seen in the linked photos, students were able to have firsthand experience with Dr. Chowdhury's current Human Factors & Ergonomics research projects. We hope to see these students back at the Whitacre College of Engineering soon!

Yue Shi and Yisha Xiang receive best paper award at the 2021 IISE conference.



IMSE graduate student Yue Shi and her advisor Dr. Yisha Xiang received the 2021 IISE QCRE Best Paper Award for their paper "Joint Optimization of Resource Allocation and Imperfect Maintenance Planning for a Multi-facility Infrastructure System".

Bryan Norman Chosen As IISE Fellow.



Dr. Bryan Norman, Chair of the IMSE Department, has been selected to be an Institute of Industrial and Systems Engineering (IISE) Fellow and will be recognized at the 2021 IISE Meeting in May.

Congratulations on promotion to Associate Professor with Tenure!



Dr. Dongping Du & Dr. Changxue Xu have been promoted to Associate Professor with Tenure. Congratulations and thank you for your dedication to our department and university.

Dr. Jennifer Cross elected as IISE Senior Vice President.



Dr. Jennifer Cross has been elected as IISE Senior Vice President, North American Operations Board. In this position, Dr. Cross will contribute to policy development and provide strategic direction to the effective operation of IISE's regions and chapters in the United States, Canada, and Mexico.

Dr. Mario Beruvides awarded The Chancellor's Council Distinguished Teaching Award.



Dr. Mario Beruvides has been awarded The Chancellor's Council Distinguished Teaching Award, recognizing members of the Texas Tech University faculty for teaching excellence, as evidenced by their attainment of distinction both within and beyond the institution for outstanding teaching and outstanding contributions related to excellence in teaching. This award is accompanied by a \$5,000 cash prize!

Liao, Xiang and Keedy Receive the SRE Doug Ogden Best Paper Award.



Ph.D. student, Leticia (Ying) Liao, and Dr. Yisha Xiang received the Doug Ogden Best Paper Award from the Society of Reliability Engineers for the paper “Age-based Maintenance Scheduling for Flowmeters With Multiple Failure Modes and Covariates” at the 2021 Annual Reliability and Maintainability Symposium (RAMS). This is a collaborative work done with Dr. Elias Keedy at Covestro company. This prestigious award is named in memory of SRE Fellow Doug Ogden. The award consists of a certificate of recognition and a \$5,000 cash award.

Dr. Suman Chowdhury is leading the effort to improve firefighter safety.



Dr. Suman Chowdhury is leading the effort to improve firefighter safety by developing a safer firefighter helmet to help mitigate the risk of traumatic head injuries while on the job. This was reported by local Fox news !

Dr. George Tan Recognized.



Dr. George Tan developed a novel core–sheath wet electrospinning approach to fabricate nanoporous polycaprolactone microtubes as potential functional capillaries for tissue engineering. This work was published as a Back-Cover article in *Macromolecular Materials and Engineering*, one of the top journals in polymer science.

Read more:

<https://onlinelibrary.wiley.com/doi/10.1002/mame.202070020>

PhD Graduate Yingge Zhou Received a Faculty Position.



IMSE PHD graduate Yingge Zhou will be joining the Department of Systems Science and Industrial Engineering at the State University of New York at Binghamton in Fall 2020 as an Assistant Professor.

Dr. Tan Receives NSF Award.



Dr. George Tan received \$485,236 from the NSF for his project “An Interdisciplinary Team-based Framework to Engage Undergraduate Students in Biomedical Innovation”. This project aims to serve the national interest by improving the preparation of biomedical engineers.

Dr. Xiang Receives NSF CAREER Award.



Dr. Yisha Xiang received the NSF CAREER Award for her proposal “Enhancing Environmental and Economic Sustainability of Additive Manufacturing-based Remanufacturing”. This award aims to improve the environmental and economic sustainability of remanufacturing with additive manufacturing by innovative proactive remanufacturing and resource-sharing. This was reported by Fox News!

Ph.D. candidate, Hui Wang, received TTU Horn Professors Graduate Achievement Award



Dr. Weilong Cong's Ph.D. student, Hui Wang, was selected as one of the four recipients of the TTU 2020 Horn Professors Graduate Achievement Award because of his over 40 total publications, including 12 first-author SCI-journal articles during his Ph.D. study at TTU. The Horn Professors Graduate Achievement Award was established by the university's Paul Whitfield Horn Professors to recognize and reward outstanding research or creative activity performed by graduate students while at the university. Besides, Hui was also awarded the TTU Doctoral Dissertation Completion Fellowship (DDCF, 2019-2020) and TTU Graduate Student Research Support Award (Fall, 2019). Hui is now supported by the DDCF award.

IMSE Program Rankings!



According to the Guide to Online Schools, Texas Tech University's IMSE department has earned the following rankings.

- 2020 Most Affordable Online Master's Industrial Engineering Degrees: #1
Read more: <https://www.onlineu.com/most-affordable-colleges/industrial-engineering-masters-degrees>
- 2020 Most Affordable Online Master's Engineering Management Degrees: #5
Read more: <https://www.onlineu.com/most-affordable-colleges/engineering-management-masters-degrees>
- 2020 Best Online Master's Industrial Engineering Degrees: #15
Read more: <https://www.onlineu.com/degrees/masters-industrial-engineering>

PhD Student, Zhiyong Hu, Recognized.



Dr. Dongping Du's PhD student, Zhiyong Hu, was awarded the Texas Tech University Doctoral Dissertation Completion Fellowship!

Zhiyong Hu won the first place in INFORMS Student Poster Competition



Our PhD student, Zhiyong Hu, won the first place in the student poster competition held annually by the Quality, Statistics, and Reliability section in the INFORMS annual meeting 2019, Seattle, WA. His poster is entitled "Generalized Polynomial Chaos-based Uncertainty Quantification and Propagation in Multiscale Modeling of Cardiac Electrophysiology". Congratulations to Zhiyong!

Weilong Cong Recognized.



Dr. Weilong (Ben) Cong has been recognized as a 2019 Outstanding Young Manufacturing Engineers by the Society of Manufacturing Engineers. This award recognizes his important contributions in the realm of additive manufacturing.

Two New Faculty Joining IMSE In The Fall.



The IMSE department is pleased to announce that Suman Chowdhury and David (Huck) Gutman will be joining the department in Fall 2019. Dr. Chowdhury's research emphasis is human systems engineering with an emphasis in human factors and biomechanics. Dr. Gutman's research emphasis is in operations research with an emphasis convex optimization with applications in big data and machine learning.

Two PhD Graduates join Universities.



Two PHD graduates will be starting new positions in academia in Fall 2019. Zhichao Liu will be joining West Virginia University and Yingbin Hu will be joining the Mechanical and Manufacturing Engineering Department at Miami University.

Shi and Xiang Receive the SRE Doug Ogden Best Paper Award.



PhD student, Yvette (Yue) Shi, and Dr. Yisha Xiang received the Doug Ogden Best Paper Award from the Society of Reliability Engineers for the paper “Structured Maintenance Policies for Deteriorating Transportation Infrastructures” at the 2019 Annual Reliability and Maintainability Symposium (RAMS). This prestigious award is named in memory of SRE Fellow Doug Ogden. The award consists of a certificate of recognition and a \$5,000 cash award.

Two Recognized for Outstanding Teaching.



Two of our graduate student instructors - Maryam Keshtzari and Sasan Torabzadehkhorsani – have been recognized for their excellence in the classroom. They both consistently receive excellent teaching evaluations.

Changxue Xu Recognized.



Dr. **Changxue Xu** has been recognized as one of 18 Outstanding Young Manufacturing Engineers by the Society of Manufacturing Engineers. This award recognizes his important contributions in the realm of manufacturing.

Michael Foss receives Distinguished Engineer Award.



IMSE alumnus **Michael Foss** received the Whitacre College of Engineering's highest award and was recognized as a Distinguished Engineer on Friday, April 20, 2018. Mr. Foss has made significant contributions to the companies he has worked for during his career including his current employer Amazon. He also has an outstanding service record including serving as President of the Institute of Industrial and Systems Engineers.
