

**UTSA**<sup>®</sup>

MECHANICAL ENGINEERING

**2017 REPORT**



## Access to Excellence

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The faculty of the Department of Mechanical Engineering values excellence in teaching, research, and service to the community and the profession. Our students learn to be technically competent and socially responsible, while they acquire a solid background to perform diverse engineering functions; to succeed in graduate education; and acquire life-long learning skills.

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## Greetings from the Alamo City!

Dear Colleagues and Friends,

It's my pleasure to share some of the great news from the Mechanical Engineering Department at UTSA. Our student enrollment and degrees awarded continue to grow and faculty research activities show strong increase. The Mechanical Engineering Undergraduate Program received full 6-year ABET accreditation in 2017. Spring 2018 brought in more great news, our ME graduate program has been ranked #126 among all mechanical engineering programs in the nation by the US NEWS.

Please read below or visit our redesigned department website for all the exciting news. We look forward to another exciting year.

### **HAI-CHAO HAN, PHD**

Professor and Department Chair  
Zachry Endowed Chair

## Quick facts

### PROGRAMS

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- PH.D. IN MECHANICAL ENGINEERING (JOINT EFFORT WITH SOUTHWEST RESEARCH INSTITUTE)
- M.S. IN MECHANICAL ENGINEERING;
- M.S. IN ADVANCED MANUFACTURING AND ENTERPRISE ENGINEERING;
- B.S. IN MECHANICAL ENGINEERING;
- OIL & GAS CERTIFICATE PROGRAM
- UNDERGRADUATE ENROLLMENT: 1211
- GRADUATE ENROLLMENT: 100 MASTERS; 53 DOCTORAL

### FACULTY

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- 23 T/TT ASSISTANT, ASSOCIATE, AND FULL PROFESSORS
- 4 FULL-TIME SENIOR LECTURERS,
- 3 ADJOINT PROFESSORS FROM SWRI.

THEY INCLUDE 6 ASME FELLOWS, 1 ASEE FELLOW, 2 AIMBE FELLOWS, 1 AHA FELLOW, AND 1 SME FELLOW.

- ANNUAL RESEARCH EXPENDITURES: \$3.2 MILLION IN FY2017

### PUBLICATIONS

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- 75 PEER-REVIEWED JOURNAL PAPERS AND BOOK CHAPTERS IN 2017

**FOR MORE INFORMATION, PLEASE VISIT OUR DEPARTMENT WEBSITE**  
<http://engineering.utsa.edu/mechanical/>



## Major Events

- 3rd Graduate student seminar day for all doctoral students to give oral presentations about their research projects was held on October 13, 2017
- 2nd ME undergraduate luncheon on March 22, 2017 to promote Graduate programs to junior and senior undergraduate students
- 1st Faculty led ME Study-abroad program started in summer 2017, hosted by Beihang University in Beijing, China.

## Awards & News

### Student News

- Senior Design project, “Fire Hose Support System for Fire Fighters” (team members: Nathaniel Mayberry, Jaspreet Sidhu, John Warden, Daniel Willis) won the grand prize in CITE competition in fall 2017.
- Senior Design project, “Roofing Clip Production Machine” (team members: Trent Hejazi, Cory Monroe, Joshua Parkman, Kristian Bounds) won the first place overall award in the fall 2017 College of Engineering Tech Symposium.
- Senior Design Team, (James Harbuck, Ana Macias, Jeffrey Weaver, and Joshua Weber; “VacMAPS (Vaccine Management and Preservation System),”) won first place for the Best Paper Award in the Undergraduate Paper category at ASEE-GSW 2017

### Faculty News

- Bing Dong received the 2017 “Distinguished Service Award” from IEA EBC (September 2017).
- Krystel Castillo received 2017 INFORMS (Institute for Operations Research and the Management Sciences) Minority Early Career Award (September 2017).
- Krystel Castillo and Pranav Bhounsule selected as the winner of “40 under 40” by SABJ (January 2017).
- Amir Karimi wins 2nd place Faculty paper award at the ASEE-GSW (March 2017).
- Krystel won Outstanding Young Faculty Award from the ASEE-GSW section (March 2017).
- Krystel Castillo won UTSA Presidential Distinguish Research Award (April 2017).
- Bing Dong received UTSA’s 2017 “Innovator of the Year” Award (November 2017).
- Dr. Krystel Castillo and Dr. Xiaowei Zeng were promoted to Associate Professor with tenure (September 2017).

# ME Faculty



**DR. ADEL ALAEDDINI**  
*Assistant Professor*

**Industrial and Systems  
Engineering**



**DR. ZHI-GANG FENG**  
*Associate Professor*

**Thermofluids Modeling**



**DR. KIRAN BHAGANAGAR**  
*Associate Professor*

**Wind Energy and  
Turbulence Modeling**



**DR. ENDER FINOL**  
*Associate Professor*

**Vascular Biomechanics**



**DR. PRANAV BHOUNSULE**  
*Assistant Professor*

**Robotics**



**DR. WEI GAO**  
*Assistant Professor*

**Solid Mechanics and Materials**



**DR. KRISTEL CASTILLO**  
*Associate Professor*

**Supply Chain Modeling**



**DR. HAI-CHAO HAN**  
*Professor and Dept Chair*

**Cardiovascular Biomechanics**



**DR. F. FRANK CHEN**  
*Brown Distinguished  
Chair Professor*

**Lean Manufacturing**



**DR. LYLE HOOD**  
*Assistant Professor*

**Medical Devices**



**DR. BING DONG**  
*Associate Professor*

**Smart Building System**



**DR. AMIR KARIMI**  
*Professor*

**Metastable Thermodynamics**



**DR. YUSHENG FENG**  
*Professor*

**Computational Bioengineering  
and Biomedicine**



**DR. AMIR JAFARI**  
*Assistant Professor*

**Robotics and Mechatronics**



# ME Faculty

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**DR. RUIJIE LIU**  
*Associate Professor*  
**Hydraulic Fracturing  
and Geomechanics**



**DR. HUNGDA WAN**  
*Associate Professor*  
**Sustainability of  
Manufacturing Systems**



**DR. VICTOR MALDONADO**  
*Assistant Professor*  
**Flow Control and  
Sustainable Aviation**



**DR. XIAODU WANG**  
*Professor*  
**Bone Biomechanics**



**DR. RANDALL MANTEUFEL**  
*Associate Professor*  
**Energy Conservation**



**DR. XIAOWEI ZENG**  
*Associate Professor*  
**Computational Mechanics**



**DR. HARRY MILLWATER,**  
*Dawson Endowed Professor  
COE Associate Dean*  
**Mechanics of Materials**



**YESH P. SINGH, PH.D.**  
*Professor Emeritus*  
**Mechanism Design**



**DR. BRENDY RINCON TROCONIS**  
*Assistant Professor*  
**Corrosion Engineering**



**MADHAVRAO "RAO"  
GOVINDARAJU, PH.D.**  
*Senior Lecturer*  
**NanoMaterials**



**DR. CAN SAYGIN**  
*Professor*  
**AVP  
Manufacturing Engineering**



**JAMES JOHNSON, MBA**  
*Senior Lecturer*  
**Engineering Design**



**ASHOK NEDUNGADI, PH.D.**

*Senior Lecturer*

**Advanced Controls**



**CARL F. POPELAR, PH.D.**

*Adjoint Professor*

**Fracture Mechanics**



**MANUEL J GARCIA, PH.D.**

*Senior Lecturer*

**Computational Materials**



**JAMES WALKER, PH.D.**

*Adjoint Professor*

**Mechanics & Materials**



**JOHN SIMONIS, PH.D.**

*Senior Lecturer*

**Engineering Design**



**YOONEUN LEE, PH.D.**

*Research Assistant Professor*

**Advanced Manufacturing**



**SIDNEY CHOCRON, PH.D.**

*Adjoint Professor*

**Mechanics & Materials**

## ME Staff



**BEN CAMPOS**

*Administrative Manager*



**CAYLA JIMENEZ, MS**

*Program Coordinator*



**MERCEDES GARCIA**

*Administrative Associate II*



**LINDA DE LA CRUZ**

*Fiscal Manager*

# MS/Ph.D. Graduates

## FALL 2016

### STUDENT NAME

**Mohamed Awad**  
**Tyler Bailey**  
**Abhishek Bapat**  
**Hamid Reza Eslami**  
**Syed Hasib Akhter Faruqui**  
**Randal Fielder**  
**Md. Saimon Islam**  
**Pranav Jagtap**  
**Deveshkumar Jariwala**  
**Cyril Jose**  
**Mohammad Mottahedi**  
**Mahmoud Nagi**  
**Milad Taher Khorsandi**  
**Adrien Tiokeng Kenyantio**  
**Laxmi Navya Vempada**  
**Rushan Wasim**

### DEGREE/PROGRAM

MS in Advanced Manufacturing & Enterprise Engineering  
 MS in Advanced Manufacturing & Enterprise Engineering  
 MS in Advanced Manufacturing & Enterprise Engineering  
 Ph.D. in Mechanical Engineering  
 MS in Mechanical Engineering  
 MS in Mechanical Engineering  
 MS in Mechanical Engineering  
 MS in Mechanical Engineering  
 MS in Advanced Manufacturing & Enterprise Engineering  
 MS in Advanced Manufacturing & Enterprise Engineering  
 MS in Mechanical Engineering  
 MS in Advanced Manufacturing & Enterprise Engineering  
 MS in Mechanical Engineering  
 MS in Advanced Manufacturing & Enterprise Engineering  
 MS in Mechanical Engineering  
 MS in Advanced Manufacturing & Enterprise Engineering  
 MS in Mechanical Engineering  
 MS in Mechanical Engineering

### ADVISOR

Hung-da Wan  
 F. Frank Chen  
 Pranav Bhounsule  
 Arturo Montoya  
 Adel Alaeddini  
 Harry Millwater  
 Arturo Montoya  
 Arturo Montoya  
 Arturo Montoya  
 F. Frank Chen  
 Hung-da Wan  
 Hai-Chao Han  
 F. Frank Chen  
 F. Frank Chen  
 Adel Alaeddini  
 Victor Maldonado  
 Victor Maldonado

## SPRING 2017

### STUDENT NAME

**Abu Saleh Ahsan**  
**Christopher Bansah**  
**Jorge Bastidas**  
**Jeffrey Bennett**  
**Mehdi Chakamehgooyemotlagh**  
**Hernan Chavez Paura Garcia**  
**Carmen De Leon-Acosta**  
**Pablo Fajardo**  
**Jason Gatewood**  
**Christopher Grant**  
**Michael Nardone**  
**Matthew Piper**  
**Clemente Romero Acosta**  
**Nidheesh Seshadri**  
**Mohammad Shahin**  
**Lionel Solomon Paul Jayaraj**  
**Karan Tilak**

### DEGREE/PROGRAM

MS in Mechanical Engineering  
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 MS in Advanced Manufacturing & Enterprise Engineering  
 Ph.D. in Mechanical Engineering  
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 MS in Mechanical Engineering

### ADVISOR

Xiaodu Wang  
 Kiran Bhanagar  
 Zhigang Feng  
 Yusheng Feng  
 Adel Alaeddini  
 Krystel Castillo  
 F. Frank Chen  
 Zhigang Feng  
 Zhigang Feng  
 Randall Manteufel  
 F. Frank Chen  
 Pranav Bhounsule  
 Hung-da Wan  
 Victor Maldonado  
 F. Frank Chen  
 Victor Maldonado  
 Xiaowei Zeng



## SUMMER 2017

### STUDENT NAME

**Matthew Kirby**  
**Veronica Lopez Hernandez**  
**Gautham Ganapathi-**  
**narayanan Muthukumaran**  
**James Stadick**

### DEGREE/PROGRAM

MS in Mechanical Engineering  
MS in Advanced Manufacturing & Enterprise Engineering  
MS in Mechanical Engineering  
MS in Advanced Manufacturing & Enterprise Engineering

### ADVISOR

Xiaodu Wang  
Hung-da Wan  
Amir Jafari  
Krystel Castillo

## FALL 2017

### STUDENT NAME

**Alejandro Bracho Avila**  
**Geoffrey Chiou**  
**Matthew Coleman**  
**Benjamin Honer**  
**Krutika Kanfade**  
**Amin Mirakhorli**  
**Analisa Roland**  
**Sue Stankus**  
**Christian Trevino**  
**Cyanea Van Trieu-Do**  
**Shu Yang**

### DEGREE/PROGRAM

MS in Advanced Manufacturing & Enterprise Engineering  
MS in Mechanical Engineering  
MS in Mechanical Engineering  
MS in Mechanical Engineering  
MS in Mechanical Engineering  
Ph.D. in Mechanical Engineering  
MS in Mechanical Engineering  
Ph.D. in Mechanical Engineering  
MS in Mechanical Engineering  
MS in Mechanical Engineering  
MS in Mechanical Engineering

### ADVISOR

Can Saygin  
Pranav Bhounsule  
Bing Dong  
Zhigang Feng  
Randall Manteufel  
Bing Dong  
Amir Jafari  
Krystel Castillo  
Pranav Bhounsule  
Yusheng Feng  
Xiaodu Wang

# Study Abroad Program

Launched in Summer 2017

**ME UG Student Eric Cantu participated in a Study Abroad Program at BeiHang University in Beijing in summer 2017. More students have enrolled to participate in summer 2018.**



**Eric Cantu and Professor Xiaodu Wang at BeiHang University.**



**Eric Cantu in Beijing.**

# New Research Grants

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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**Bhounsule, Pranav**  
Accelerated path teaching for robotic routing using ROS Industrial framework  
Southwest Res Inst  
2017-04-27  
34311

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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**Bhounsule, Pranav**  
Control Systems Education and Outreach to Low-Income High-School Students in San Antonio  
Arizona State University  
2017-11-15  
10000

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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**Castillo Villar, Krystel**  
An Open Source Based Proactive Energy Management System (PEMS) for Integrated Control of Battery Energy Storage System (BESS) and Solar-Powered Buildings  
City Public Svc  
2017-08-24  
701288

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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**Castillo Villar, Krystel**  
Cloud-based Data Analytics To Support Sustainable Clean Energy Production  
University of Texas at San Antonio Open Cloud Institute  
2017-10-06  
30000

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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**Chen, Fengshan**  
Support of Process Improvement Program in Air Force 149th Mission Support Group  
US Dept of the Air Force  
2017-09-22  
22000

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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**Dong, Bing**  
ICORPS: Dynamic Real-Time Energy Management System (EMS) to Improve Building Energy Efficiency and Wellness  
Natl Science Fdn  
2017-03-09  
50000

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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**Dong, Bing**  
Marriott Strategic Data Analysis and Management Project  
Marriott Intl Inc  
2017-06-23  
48957

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

**Dong, Bing and and Xu, Jeff Qiang**  
An Open Source Proactive Energy Management System (PEMS) for Integrated Control of Energy Storage and Solar Powered Buildings  
Leaptran Inc  
2017-08-24  
45000

PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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PI/CO-PI NAME  
PROJECT TITLE  
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PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

**Feng, Yusheng**

Develop A Mobile Visualization System for Teaching and Research  
UTSA OIT  
2017-11-16  
29597

**Gao, Wei**

GREAT: Advanced Materials based on Two-dimensional Building Blocks -  
Computational Design based on Chemistry and Topology  
UTSA VPR Office  
2017-08-02  
20000

**Hood, Robert**

GREAT: An Improved Cystoscopic Approach for 3D Imaging of Intrabladder Cancers  
UTSA VPR Office  
2017-08-11  
20000

**Hood, Robert**

Development of an Improved Suction Device Design  
University of TX HSC at San Antonio 745  
2017-12-14  
25000

**Millwater, Harry**

Fleet Management and Efficiency Improvements - Extensions to the SMART|DT  
Software  
US DOT Federal Aviation Admn  
2017-05-22  
480000

**Millwater, Harry**

Digital Twin Big Data and High-Performance Computing in the Cloud  
University of Texas at San Antonio Open Cloud Institute  
2017-10-04  
30000

**Millwater, Harry**

Faculty Development Program at the University of Texas at San Antonio: Probabilistic  
Risk Assessment of Stress Corrosion Cracking in Nuclear Facilities  
US Nuclear Regulatory Comm  
2017-06-30  
450000

**Rincon Troconis, Brendy**

Faculty Development Program at the University of Texas at San Antonio:  
Probabilistic Risk Assessment of Stress Corrosion Cracking in Nuclear Facilities  
US Nuclear Regulatory Comm  
2017-06-30  
450000

PI/CO-PI NAME  
PROJECT TITLE  
  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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PI/CO-PI NAME  
PROJECT TITLE  
  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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PROJECT TITLE  
  
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DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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PI/CO-PI NAME  
PROJECT TITLE  
SPONSOR  
DATE OF FUNDING  
PROJECTED TOTAL FUNDING

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**TOTAL**

**Rincon Troconis, Brendy**

Effect of Passive Film Composition on the Electrochemical Behavior and Cracking of Corrosion Resistant Alloys Utilizing Surface Enhanced Raman Spectroscopy  
NACE International  
2017-07-24  
30000

**Rincon Troconis, Brendy**

CONNECT: Effects of Triazine-Based H<sub>2</sub>S Scavenger Byproducts on the Film Composition and Cracking of Carbon Steel in Oilfield Applications  
UTSA VPR Office  
2017-08-04  
50000

**Rincon Troconis, Brendy**

Development of Technological Corrosion and Materials Test Site for Student Advancement  
UTSA OIT  
2017-11-16  
5000

**Wan, Hung-Da and Saygin, Can**

Support of Process Improvement Program in Air Force 149th Mission Support Group  
US Dept of the Air Force  
2017-09-22  
22000

**Wang, Xiaodu**

Supplement to Multiscale modeling of ultrastructural origins of bone fragility  
Natl Science Fdn  
2017-05-01  
8000

**Wilkerson, Justin**

Void Dominated Failure  
John Hopkins University  
2017-01-21  
95000

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**\$4158729**

# Faculty Publications

1. **Alaeddini A, Seung HH (2017).** A Multi-way Multi-task Learning Approach for Multinomial Logistic Regression. *Methods of information in medicine*, 56.4 (2017): 294-307.
2. **Bakhtiarifar, MH, Amirhossein A, and Alaeddini A (2017).** Economic-statistical design of  $X^2$  Shewhart control charts with fuzzy parameters. *Journal of Intelligent & Fuzzy Systems*, 32(6): 3961-3971.
3. **Motasemi A, Alaeddini A, Zou C (2017).** An Area-based Methodology for the Monitoring of General Linear Profiles. *Quality and Reliability Engineering International*, 33(1): 159-181.
4. **Alaeddini A, Jaramillo CA, Faruqi SHA, Pugh MJ (2017).** Mining Major Transitions of Chronic Conditions in Patients with Multiple Chronic Conditions. *Methods of Information in Medicine*, 56.5 (2017): 391-400.
5. **Bhaganagar K, Pillalamarri N\* (2017).** Lock-Exchange Release Density Currents over 3-D Regular Regular Roughness Elements, *Journal of Fluid Mechanics*, 832:793-824.
6. **Bhaganagar K, BhimiReddy S\* (2017).** Assessment of the plume dispersion due to chemical attack on April 4, 2017, in Syria, *Natural Hazards*, 88(3):1893-1901.
7. **Bhaganagar K (2017).** Role of head of turbulence 3-D density currents in mixing during slumping regime, *Physics of Fluids*, 29: 020703.
8. **Bhaganagar K, Gatski T, George W (2017).** Preface to special topic: A tribute to John Lumley, *Physics of Fluids*, 29: 020501.
9. **Bhaganagar K (2017).** Editorial: Tributes to the lasting legacy of John Leask Lumley in turbulence: A perfect man in an imperfect world, *Physics of Fluids*, 020601.
10. **Bhounsule PA, Zamani A (2017).** Stable bipedal walking with a swing-leg protraction strategy. *J Biomech*. 51:123-127.
11. **Bhounsule PA, \*Zamani A (2017).** A Discrete Control Lyapunov Function for Exponential Orbital Stabilization of the Simplest Walker, *ASME Journal of Mechanism and Robotics*.
12. **Bhounsule PA (2017),** Two benchmarks for optimization of legged robots – hybrid systems with impulse effects, *Dynamics of Continuous, Discrete and Impulsive Systems Series B: Applications and Algorithms*, 24: 269-282.
13. **Bhounsule PA (2017).** Control based on passive dynamic walking, *Bioinspired Legged Locomotion: Models, Concepts, Control and Applications*, 1st edition, Editors: Maziar Sharbafi and Andre Seyfarth. Publisher: Elsevier, Butterworth-Heinemann, ISBN. 9780128037744 (Book chapter)
14. **Bhounsule PA, Yamane K (2017).** Accurate Task-Space Tracking for Humanoids with Modeling Errors using Iterative Learning Control. *Intl. Journal of Humanoid Robots*, 14(3), 1750015.
15. **Zamani A\*, Bhounsule P (2017).** Foot Placement and Ankle Push-off Control for the Orbital Stabilization of Bipedal Robots *IEEE/RSJ Intl. Conference on Intelligent Robots and Systems, Vancouver, BC, Canada*, September 24-28.
16. **Chavez H\*, Castillo-Villar KK, Webb E (2017).** Development of the IBSAL-SimMOpt Method for the Optimization of Quality in a Corn Stover Supply Chain. *Energies*. 10: 1137.
17. **Castillo-Villar KK, Eksioğlu S, Taherkhorsandi M\* (2017).** Integrating biomass quality variability in stochastic supply chain modeling and optimization for large-scale biofuel production. *Journal of Cleaner Production*. 149: 904-918.
18. **Chavez H\*, Castillo-Villar KK, Herrera L, Bustos A (2017).** Simulation-based Multi-Objective Model for Supply Chains with Disruptions in Transportation. *Robotics and Computer-Integrated Manufacturing*, 43: 39-49.
19. **Garza-Reyes JA, Kumar V, Chen FF, Wang YC (2017).** Editorial for Special Issue - Seeing Green: Achieving Environmental Sustainability through Lean and Six Sigma, *International Journal of Lean Six Sigma*, 8(1): 2-6.
20. **Chen FF (2017).** Editorial Preface-Special Issue on Extended Papers Selected from FAIM 2014 Flexible Automation and Intelligent Manufacturing, *Robotics and Computer Integrated Manufacturing – An International Journal*, 43(1), ISSN 0736-5845.
21. **Chen J, Dong M, Chen FF (2017).** Joint Decisions of Shipment Consolidation and Dynamic Pricing of Food Supply Chains, *Robotics and Computer Integrated Manufacturing – An International Journal*, 43(1): 135-147.
22. **Krishnaiyer K, Chen FF (2017).** A Web-based Visual Decision Support System (WVDSS) for A Letter Shop, *Robotics and Computer Integrated Manufacturing – An International Journal*, 43(1): 148-154.
23. **Yan D, Hong T, Dong B, Mahdavi A, D'Oca S, Gaetani I, Feng X. (2017).** IEA EBC Annex 66: Definition and simulation of occupant behavior in buildings. *Energy and Buildings*. 156:258-70.
24. **Andrews, C.J. and Dong, B., 2017,** December. Applications incorporating occupant behavior into building simulation. In *Building Simulation 10 (6)*: 783-783.
25. **Mirakhorli A, Dong B (2017).** Occupant-behavior driven appliance scheduling for residential buildings. In *Building Simulation 10(6)*: 917-931.

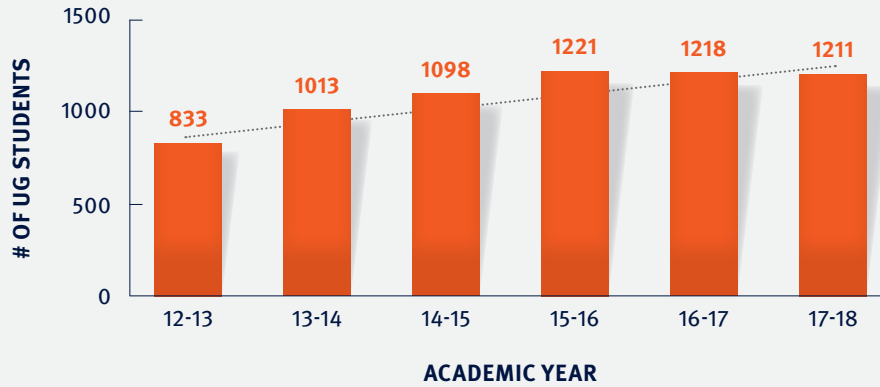


26. **Xue P, Hong T, Dong B, Mak C (2017)**. A preliminary investigation of water usage behavior in single-family homes. In *Building Simulation*, 10(6): 949-962. Tsinghua University Press.
27. **Xu X, Maki A, Chen CF, Dong B, Day JK (2017)**. Investigating willingness to save energy and communication about energy use in the American workplace with the attitude-behavior-context model. *Energy Research & Social Science*. 32: 13-22.
28. **Li Z, Dong B (2017)**. A new modeling approach for short-term prediction of occupancy in residential buildings. *Building and Environment*, 121: 277-290.
29. **Hu S, Yan D, Guo S, Cui Y, Dong B (2017)**. A survey on energy consumption and energy usage behavior of households and residential building in urban China. *Energy and Buildings*, 148: 366-378.
30. **Muluk SL, Muluk PD, Shum J\*, Finol EA (2017)**. On the use of geometric modeling to predict aortic aneurysm rupture, *Annals of Vascular Surgery*, 44: 190-196.
31. **Chauhan SS\*, Gutierrez CA\*, Thirugnanasambandam M, De Oliveira V, Muluk SC, Eskandari MK, Finol EA (2017)**. The association between geometry and wall stress in emergently repaired abdominal aortic aneurysms, *Annals of Biomedical Engineering*, 45(8): 1908-1916.
32. **Ruiz de Galarreta S\*, Cazón A, Antón R, Finol EA (2017)**. The relationship between surface curvature and abdominal aortic aneurysm wall stress, *Journal of Biomechanical Engineering*, 139(8), 081006 (7 pages).
33. **Ruiz de Galarreta S\*, Antón R, Cazón A, Finol EA (2017)**. A methodology for developing anisotropic AAA phantoms via additive manufacturing, *Journal of Biomechanics*, 57: 161-166.
34. **Ruiz de Galarreta S\*, Antón R, Cazón A, Finol EA (2017)**. A methodology for verifying abdominal aortic aneurysm wall stress, *Journal of Biomechanical Engineering*, 139(1), 011006 {9 pages}.
35. **Rahman M\*, Feng Y, Yankeelov T, Oden JT (2017)**. A Fully Coupled Space-Time Multiscale Modeling Framework for Predicting Tumor Growth, *Computer Methods in Applied Mechanics and Engineering*, *Comp Meth in Appl Mech & Eng*, 320:261–286.
36. **Monsalvo JF, Garcia MJ, Millwater HR, Feng Y, (2017)**. Sensitivity Analysis for Radiofrequency Induced Thermal Therapies using the Complex Finite Element Method, *Finite Elements in Analysis and Design* 135: 11–21.
37. **Duan Y\*, Feng ZG, Michaelides Efstathios E, Mao S (2017)**. Modified kinetic theory applied to the shear flows of granular materials. *Physics of Fluids* 29 (4): 043302.
38. **Duan Y\*, Feng ZG (2017)**. Incorporation of velocity-dependent restitution coefficient and particle surface friction into kinetic theory for modeling granular flow cooling. *Phys. Rev. E* 96, 062907
39. **Feng ZG, Cortina M\* Chesnutt JKW, Han HC (2017)**. Numerical simulation of thrombotic occlusion in tortuous arterioles. *J Cardiol Cardiovasc Med*. 2: 095-111.
40. **Meng Z, Crespo R, Xia W, Gao W, Ruiz L, Espinosa H, and Keten S (2017)**, A coarse-grained model for the mechanical behavior of graphene oxide, *Carbon*, 117: 476-487.
41. **Yang\* R, Zaheri\* A, Gao W, Hayashi C, Espinosa HD (2017)**. AFM Identification of Beetle's Exocuticle – Bouligand Structure and Nanofiber Anisotropic Elastic Properties, *Advanced Functional Materials*, 1603993. (Featured on the Front Cover of the Journal, Media reports: Science Newline, Science Daily, PHYS.ORG.)
42. **Benedetti I, Crespo R, Pedivellano A, Gao W, Espinosa H (2017)**. A Continuum Damage Model for Functionalized Graphene Membranes Based on Atomistic Simulations, *Key Engineering Materials*, 754: 173-176.
43. **Wang P, Gao W, Wilkerson J, Liechti K, Huang R (2017)**. Cavitation of water by volume controlled stretching, *Extreme Mechanics Letters*, 11:59–67.
44. Yarce A, Sebastián Rodríguez J, Galvez J, Gómez A, García MJ (2017). Simple-1: Development stage of the data transmission system for a solid propellant mid-power rocket model. *Journal of Physics: Conference Series*, 850(1): 012019.
45. **García M, Laín S, Orrego S, Barbosa J, Quintero B (2017)**. Hydraulic and rotor-dynamic interaction for performance evaluation on a Francis turbine. *Int J Interact Des Manuf*, 11:623–632.
46. **Perez CA, Garcia MJ (2017)**. Flow behaviour over a 2D body with free surface using a modified moving particle semi-implicit method. *International Journal on Interactive Design and Manufacturing* 11(3): 633-640.
47. **Halaney DL, Sanyal A, Nafissi NA, Escobedo D, Goros M, Michalek J, Acevedo PJ, Pérez W, Escobar GP, Feldman MD, Han HC (2017)**. The importance of trabeculae carneae for left ventricular diastolic compliance: improvement in compliance with trabecular cutting. *J Biomech Eng*. 139(3): 031012.
48. **Yang H, Fortier A, Horne K, Mohammad A, Banerjee S, Han HC (2017)**, Investigation of Stent Implant Mechanics Using Linear Analytical and Computational Approach. *Cardiovascular Eng Tech*. 8(1):81-90.
49. **Garcia JR\*, Sanyal A, Fatemifar F\*, Mottahedi M, Han HC (2017)**. Twist buckling of veins under torsional loading. *J Biomech* 58: 123-130.
50. **Wang GL\*, Wang LY, Yang SX, Zhang P, Chen XH, Yao QP, Gong XB, Qi YX, Jiang ZL, Han HC (2017)**. Arterial wall remodeling under sustained axial twisting in rat. *J Biomech* 60:124-133.
51. **Hood RL, Hood GD, Ferrari M, Grattoni A (2017)**. Pioneering medical advances through nanofluidic implantable technologies. *Wiley Interdiscip Rev Nanomed Nanobiotechnol*. 9(5): e1455.

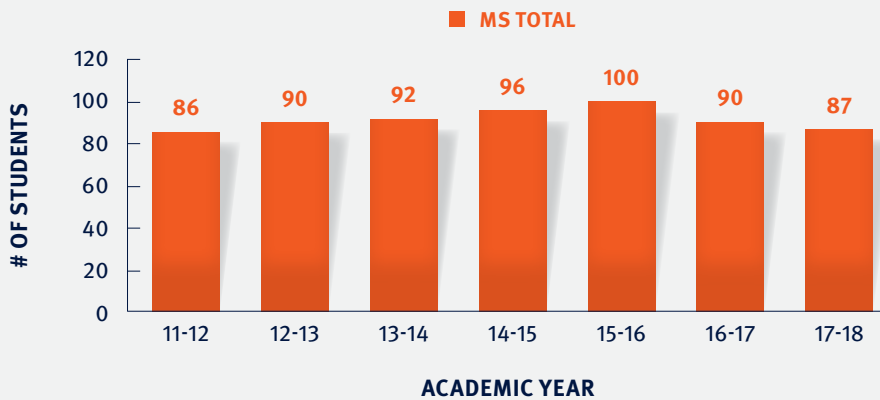
52. **Lee, JH, Wahrmond C, Jafari A (2017)**. A novel mechanically overdamped actuator with adjustable stiffness (MOD-AwAS) for safe interaction and accurate positioning. *Actuators* 6(3): 22-35.
53. **Wahrmond C, Jafari A (2017)**. Motor modeling and optimization of a back actuated lower extremity exoskeleton for stair gait cycles. *IRAJ* 2(5): 1-9.
54. **Vuong ND, Li R, Chew CM, Jafari A (2017)**. A novel variable stiffness mechanism with linear spring characteristic for machining operation. *Robotica* 3(57): 1627-1637.
55. **Maldonado V, Gupta S (2017)**. Active Flow Control of a Low Reynolds Number S809 Wind Turbine Blade Model under Dynamic Pitching Maneuvers, *Open Journal of Fluid Dynamics*, 7: 178-193.
56. **Hegde C, Daigle H, Millwater HR, Gray K (2017)**. Analysis of Rate of Penetration (ROP) Prediction in Drilling using Physics-based and Data-driven Models, *Journal of Petroleum Science and Engineering* 159: 295-306.
57. **Fielder\* R, Montoya A, Millwater HR, Golden P (2017)**. Residual Stress Sensitivity Analysis using a Complex Variable Finite Element Method, *International Journal of Mechanical Sciences* 133: 112-120.
58. **Montoya A, Millwater HR (2017)**. Sensitivity Analysis in Thermoelastic Problems using the Complex Finite Element Method, *J. of Thermal Stresses*, 40:3 302-321.
59. **Goros M, Schmidt S, Parsons HM, Saygin C, Wan H, Shireman PK, Gelfond JAL (2017)**. Improving Initiation and Tracking of Research Projects at an Academic Health Center: A Case Study, *Evaluation & the Health Professions*, 40(3): 372-379 (IF: 1.306).
60. **Troconis BCR, Harris ZD, Ha H, Burns JT, Scully JR (2017)**. The effect of heat-to-heat variations in metallurgy and hydrogen-metal interactions on the hydrogen embrittlement of Monel K-500. *Materials Science & Engineering A*, 703:533-550.
61. **Sims T\* and Wan H (2017)**. Constraint Identification Techniques for Lean Manufacturing Systems, *Robotics and Computer-Integrated Manufacturing*, 43: 50-58 (IF: 2.846).
62. **Lin L, Wang X, Zeng X. (2017)**. Computational modeling of interfacial behaviors in nanocomposite materials, *International Journal of Solids and Structures* 115-116, 43-52.
63. **Islam M, Wang X (2017)**. Effect of coring conditions on temperature rise in bone, *Bio-medical materials and engineering* 28(2): 201-211.
64. **Li S, Niu G, Dong NX, Wang X, Liu Z, Song C, Leng H (2017)**. Osteoporosis affects both post-yield microdamage accumulation and plasticity degradation in vertebra of ovariectomized rats, *Acta Mech. Sin.* 33(2):267-273.
65. **Lin L, Wang X, Zeng X (2017)**. An improved interfacial bonding model for material interface modeling, *Engineering Fracture Mechanics* 169: 276-291.
66. **Lin L, Samuel J, Wang X, Zeng X.(2017)**. Contribution of extrafibrillar matrix to the mechanical behavior of bone using a novel cohesive finite element model, *Journal of Mechanical Behavior of Biomedical Materials* 65: 224-235.
67. **Nguyen T, Luscher DJ, Wilkerson JW (2017)**. A dislocation-based crystal plasticity framework for dynamic ductile failure of single crystals, *J. Mech. Phys. Solids* 108:1-29.
68. **Wilkerson, JW (2017)**. On the micromechanics of void dynamics at extreme rates. *Int. J. Plasticity* 95:21-42.
69. **Li M, Lin L, Guo R, Bhalla A, Zeng X (2017)**, Numerical Investigation of Size Effects on Mechanical Behaviors of Fe Nanoparticles through an Atomistic Field Theory, *Journal of Micromechanics and Molecular Physics*, 2(3): 1-15, 1750010.
70. **Lin L, Wang XQ, Zeng X (2017)**. Failure Analysis of C/SiC Composites by Cohesive FEM, *International Journal of Terraspace Science and Engineering*, 9(1): 95-100.
71. **Liu N, Hong J, Zeng X, Pidaparti R, Wang XQ (2017)**. Fracture Mechanisms in Multilayer Phosphorene Assemblies: From Brittle to Ductile, *Physical Chemistry Chemical Physics*, 19: 13083-13092.
72. **Lin L and Zeng X (2017)**. Computational Study of Cell Adhesion and Rolling in Flow Channel by Meshfree Method, *Computer Methods in Biomechanics and Biomedical Engineering*, 20(8): 832-841.
73. **Lin L, Wang XQ, Zeng X (2017)**. The Role of Cohesive Zone Properties on Intergranular to Transgranular Fracture Transition in Polycrystalline Solids, *International Journal of Damage Mechanics*, 26(3): 379-394.
74. **Lin L, Zeng X (2017)**. Computational Modeling and Simulation of Crack Growth in Poly-crystalline Material with Defects by a Multiscale Interfacial Zone Model, in *Material Modelling: Applications, Challenges and Research*, Ed. A.F.C. Vieira, Chapter 4, 89-105, *NOVA Science Publishers, Inc. New York*.
75. **Patnaik SS, Laganà AS, Vitale SG, Butticiè S, Noventa M, Gizzo S, Valenti G, Agnese Maria Chiara Rapisarda, Valentina Lucia La Rosa, Carlo Magno · Onofrio Triolo, Vani Dandolu (2017)**. Etiology, pathophysiology and biomarkers of interstitial cystitis/ painful bladder syndrome. *Archives of Gynecology and Obstetrics* 295: 467-481.

# Department Growth

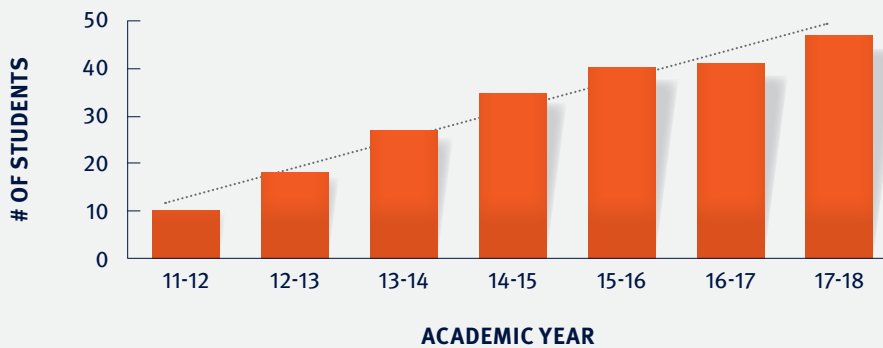
**FIGURE 1 | UG ENROLLMENT**



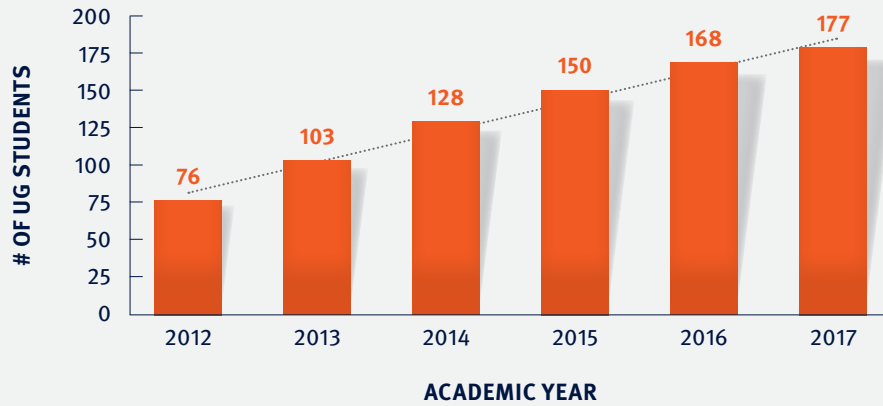
**FIGURE 2 | ME GRADUATE STUDENT ENROLLMENT**



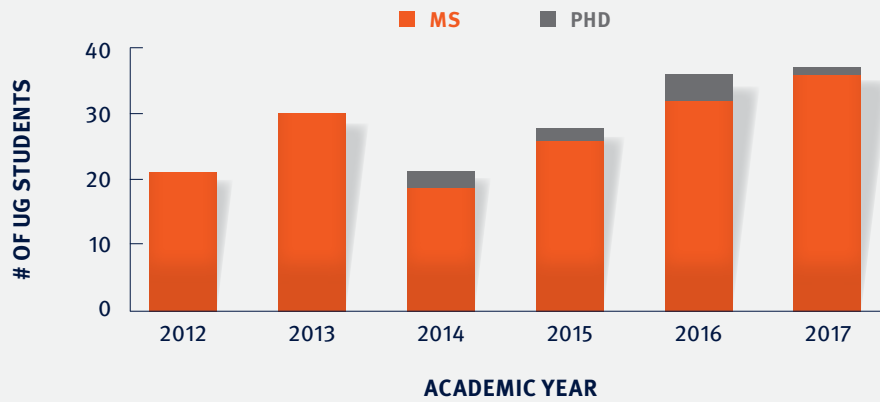
**FIGURE 3 | PHD ENROLLMENT**



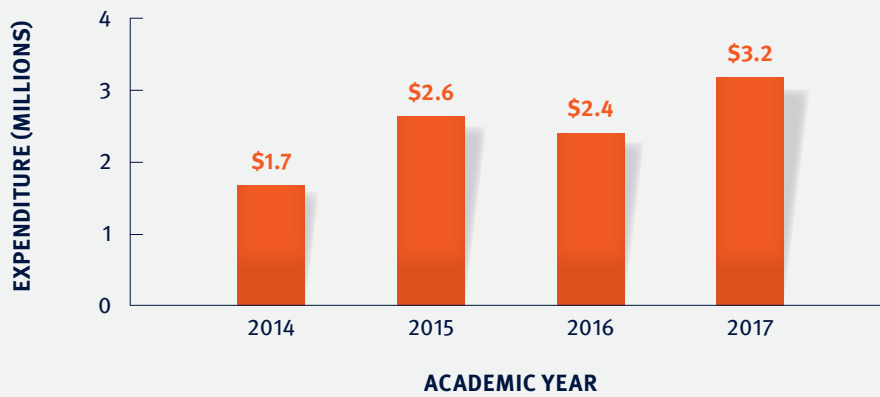
**FIGURE 4 | UG DEGREE AWARDED**



**FIGURE 5 | MS AND PHD DEGREES AWARDED**

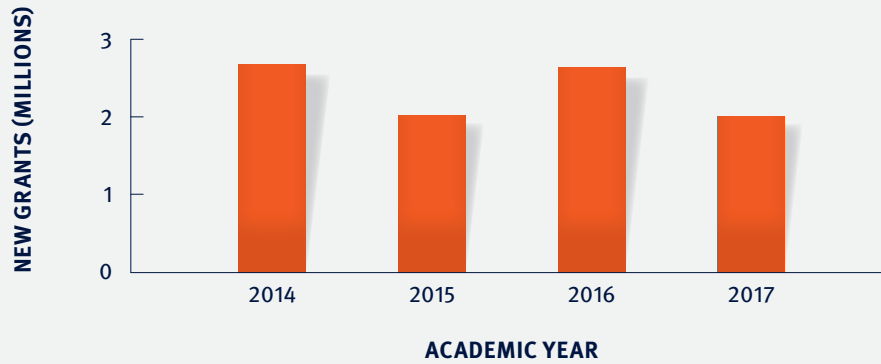


**FIGURE 6 | RESEARCH EXPENDITURE**

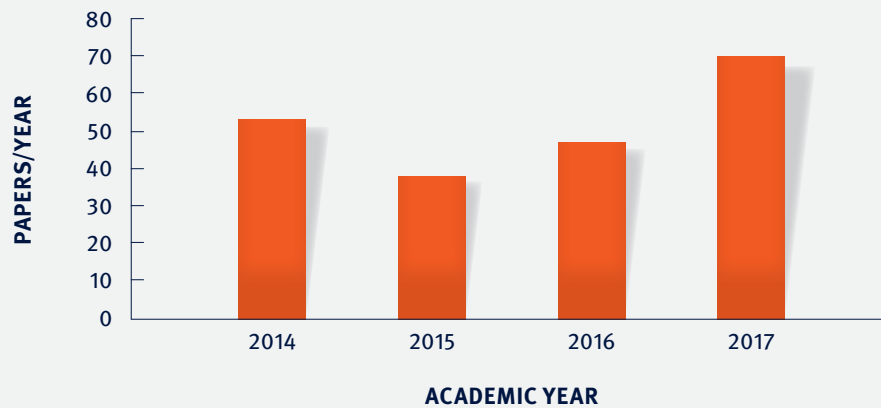


# Department Growth

**FIGURE 7 | RESEARCH EXPENDITURE**



**FIGURE 8 | JOURNAL PAPERS PUBLISHED**





# Department Faculty Awards

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- Graduated mentor award: Harry Millwater for graduate 1 PhD and 4 MS students.
- Mentor with most student publications: Bing Ding for 5 journal papers with students.
- Most journal publications: Hai-Chao Han for 8 peer-reviewed journal papers
- Largest research expenditure: Harry Millwater (\$626K)
- Largest research expenditure at the Assistant professor level: Krystal Castillo (\$233K)
- Best UG course student evaluation: Randy Manteufel (4.8)
- Best Grad course student evaluation: Xiaowei Zeng (5.0)
- UG course with largest enrollment: Madhavrao “Rao” Govindaraju (135)
- UG course with largest enrollment (T/TT): Amir Jafari (113)
- Grad course with largest enrollment: Yusheng Feng (39)
- Services: Amir Karimi for leading the effort in ABET preparation, HungDa Wan and Randy Manteufel for serving as Assistant Department Chair.

# ME Department Advisory Council Members

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- **Jahan Eftekhari (Chair)**, *Founder, J. Eftekhari & Associates*
- **Norm Abramson**, *NAE member, Southwest Research Institute (Retired)*
- **Henry Bernstein**, *President, Gas Turbine Materials Associates*
- **Randy Brown**, *Zachry Industrial Inc.*
- **Steven Griffin**, *Intertek*
- **Dan Gonzalez**, *VP, StandardAero*
- **J. Michael Harris (PE)**, *CPS Energy*
- **Bryan Lancon**, *VP, BRL Consultants*
- **Liza Meyer**, *City of San Antonio, City Manager’s Office*
- **Jose Rodriguez (PE)**, *Goetting & Associates*
- **Luis Sanchez**, *VP, Harland Clarke*
- **Darren Simmons**, *VP, Aalberts Dispense Technologies*

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