

# HIGHLIGHTS OF 2017

## DEPARTMENT AT A GLANCE

### Faculty and Research

- **13** full professors, **9** associate professors, **7** assistant professors
- **5** associate editors for archival journals
- **58** professional journal publications by students and faculty
- **184** presentations at conferences and invited forums
- **\$4.7 million** in external research awards
- **\$750,000** in Capstone educational grants
- **1,384** total students enrolled
- **500** students in the freshman seminar

### Degrees Granted

- Bachelor's 156
- Master's 23
- Doctoral 5

### 2017 PRESTIGIOUS FELLOWSHIPS

**Nathan Pehrson:** NASA Space Technology Research Fellowship

**Andrew Davis:** National Science Foundation Award

**Cody Carpenter:** Science, Math, and Research Transformation Scholarship (SMART) from the Department of Defense



MARS ROVER

### FROM THE CHAIR



Dear Friends and Associates,

It is my pleasure to help you catch up on happenings in the Mechanical Engineering Department in 2017. During the last year we awarded an all-time high number of degrees, had a large number of students enroll in our freshman seminar, received more than \$4 million in external funding for research and Capstone projects, and had 42 Capstone projects that involved students from three departments (see left for these and more stats). ME student competition teams had another strong year, placing high in their national competitions. The new Engineering Research Laboratory (ERL) was just completed, and we are now assembling state-of-the-art research wind and water tunnels and combustion reactors. We will be moving into the new engineering building following its completion in August. I encourage you to update your alumni information at BYU and to stay connected with us.

Sincerely,

*Daniel Maynes*

Daniel Maynes, **PROFESSOR AND CHAIR OF MECHANICAL ENGINEERING**

### FIRST ANNUAL ALUMNI DINNER

The first annual alumni dinner was in April 2017 and recognized two BYU mechanical engineering graduates—**Major General David A. Harris** and **Dr. Brady R. Davies**—for years of service in their professional careers and to the community.

**Major General David A. Harris** (BS '86, MS CSU Fresno) currently leads all Air Force Development Test programs across the country. He has extensive Air Force leadership experience, including postings in Saudi Arabia; Edwards Air Force Base; Washington, DC; Holloman Air Force Base; and Eglin Air Force Base. In addition to mechanical engineering, he graduated from the Air Force ROTC program at BYU.

**Dr. Brady R. Davies** (BS '83, MEM '84, PhD '88) serves as the division chief engineer for L3 Technologies Communications Systems Division in Salt Lake City. For almost a decade, he worked in their robotics and MEMS groups before becoming director of engineering at Kistler Instrument. His career has spanned the aerospace, semiconductors, automotive, and communication industries.



### FACULTY AND STAFF HIGHLIGHTS

From left to right:

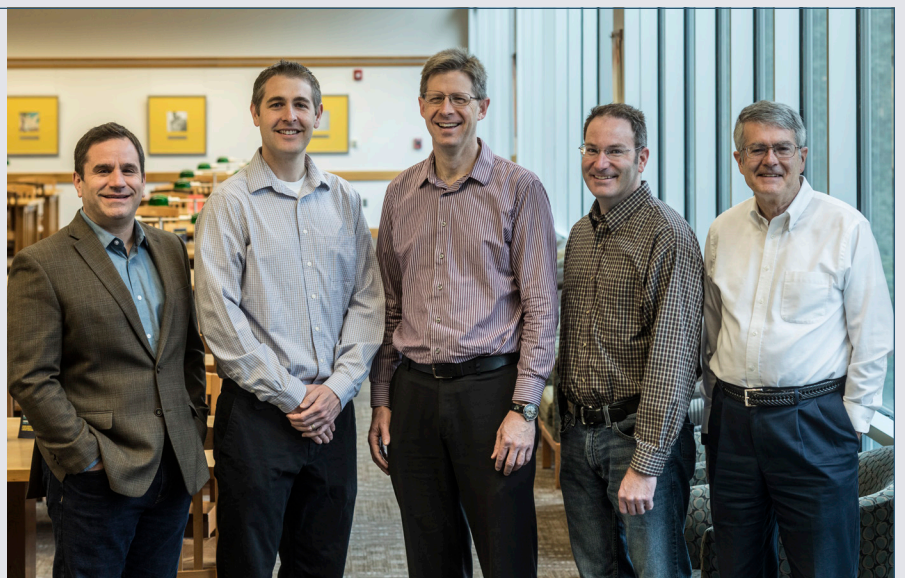
**Associate Professor Mark Colton** was the student-voted best mechanical engineering teacher in 2017.

**Assistant Professor John Salmon** received the 2017 Outstanding Research Award for his multiple publications and significant research funding.

**Professor Brian Jensen** received the 2017 Outstanding Teaching Award for excellence in teaching and mentoring students.

**Kevin Cole** received the Outstanding Staff Employee award, which recognizes and rewards outstanding achievements of a staff employee who has served in the college for at least three years.

*Continued on back*

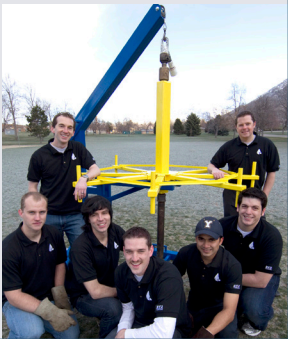




FACULTY AND STAFF HIGHLIGHTS *Continued from front*

**Professor Alan Parkinson** was the recipient of the 2017 Abraham O. Smoot Citizenship Award, given annually to a university faculty member who, through a career of distinguished service to the university, has demonstrated qualities of service and personal sacrifice while affirming the unique mission of the university.

Developed originally as a student Capstone project under the direction of **Professor Chris Mattson**, a portable human-powered drill that affordably provides clean water in remote villages is now being adopted worldwide.



**THE BYU BAJA TEAM'S** innovative ATV placed 15th at the SAE Baja event in Peoria, Illinois. More than 100 national and international teams competed.



BYU FLOW LAB



Directed by Professor Andrew Ning and under funding from Facebook, the BYU FLOW lab is designing airplanes that can deliver the internet to more of the developing world. But designing an aircraft that can stay in the air for months at a time is difficult, as it must generate sufficient solar power to survive long winter nights, be able to fly at high altitudes where wind speeds are reduced, and, like wind turbine blades, be as long and as light as possible to reduce lift-dependent drag. The wind industry must also overcome energy-production losses caused by wake interference. Funded by an NSF grant and an NREL grant, the FLOW Lab is exploring approaches that will help engineers better understand wake interaction and design significantly more efficient wind farms.

Additionally, emerging aircraft applications such as on-demand mobility—think Uber in the sky—are facing similar challenges. Improvements in autonomy and battery technologies are enabling aircraft designs that use a large number of small propellers for vertical take-off and landing. However, the use of many propellers and moving surfaces creates complex aerodynamic interactions that are not well understood.

MECHANICAL ENGINEERING COMPETITIONS

In May 2017 **the Supermileage Team**, headed by Professor Dale Tree, traveled to Detroit and competed in the Shell Eco Marathon Challenge. With an international field featuring 56 cars, BYU's team finished in second place. The car can travel 1,700 miles on a single gallon of gas.



**BYU's Rocket Club** launched a rocket almost 10,000 feet at the Intercollegiate Rocket Engineering Competition, which hosted 115 teams from around the world. The club was funded by a \$5,000 Utah space grant and is sponsored by TCR Composites. The team is headed by Assistant Professor Andrew Ning.



Competing against elite university teams from 13 countries, BYU entered their **Mars Rover** in the University Rover Challenge and placed fourth. The rover had to traverse rough terrain, take soil samples, and navigate and drive itself to different GPS locations. The team was advised by Assistant Professor Marc Killpack.



NEW FACULTY



**Assistant Professor Douglas Cook** received his BS from Utah State and his MS and PhD from Purdue University. He conducts research on crop biomechanics for the purpose of quantifying factors that are predictive of crop stalk strength.



**Associate Professor Nathan Crane** received his BS and MS from BYU and his PhD from MIT. His research focuses on the principles of engineering design and the science for improving existing manufacturing processes.



**Professor Brent Webb** returned to the department after having served as associate academic vice president for research and graduate studies from 2005 to 2011 and academic vice president from 2011 to 2017.

NOMINATE A FELLOW ALUM

Last year two alumni received the inaugural Distinguished Alumni Award (see reverse for more information on the recipients). Help us identify other BYU ME graduates who deserve to be recognized for their outstanding engineering achievements in leadership, educational, technical, or humanitarian areas. Send nomination letters to [me-externalrelations@byu.edu](mailto:me-externalrelations@byu.edu).

KEEP US IN THE LOOP

Please send information on your accomplishments and career growth, as well as that of other BYU Mechanical Engineering alumni, to [me-externalrelations@byu.edu](mailto:me-externalrelations@byu.edu). We like to share alumni spotlights via social media, on our website, and in our annual alumni mailer.

STAY CONNECTED



Department of Mechanical Engineering  
Brigham Young University, 435 CTB  
Provo, UT 84602  
801-422-2625  
[me.byu.edu](http://me.byu.edu)

R. Daniel Maynes, Department Chair  
Anton E. Bowden, Graduate Coordinator  
Dale R. Tree, Associate Chair  
Mark B. Colton, Undergraduate Coordinator

Mechanical Engineering alumni website:  
[me.byu.edu/content/alumni-home](http://me.byu.edu/content/alumni-home)  
Capstone program: [capstone.byu.edu](http://capstone.byu.edu)