



NEW DEPARTMENT CHAIR

Professor Daniel Maynes completed six years of service as department chair in July 2019. He has returned to the regular faculty and is enjoying increased time to teach and conduct research. Professor Maynes was replaced by Professor Dale R. Tree, who has been a faculty member at BYU for 25 years and has spent the past six years serving as associate chair of the department.

DEPARTMENT  
AT A GLANCE

FACULTY AND RESEARCH

- 14 full professors
- 8 associate professors
- 6 assistant professors
- \$5.7 million in new research awards
- 507 students in the freshman seminar
- 1,200 undergraduate students enrolled
- 146 graduate students enrolled
- 54 Capstone projects (2019–2020)
- \$1,000,000 in Capstone grants (2019–2020)

Degrees Granted

- 170 bachelor’s
- 31 master’s
- 11 doctoral

Dear Friends and Associates,

The past year has been yet another eventful one for the BYU Mechanical Engineering Department. I was appointed department chair on July 1, and over the past several months I have been impressed with the depth and breadth of accomplishments by our remarkable students and faculty. The number of BS and PhD degrees awarded last year is the highest ever. External funding for research and Capstone projects totaled \$6.3 million in awards, which is by far the largest amount of external research awards the department has received. The faculty submitted 73 proposals to acquire funding to support research and mentored learning, and we currently have 54 Capstone projects in progress—the largest number ever. ME student competition teams had another strong year, with top-10 finishes in two international competitions. Students and faculty published 105 peer-reviewed papers reporting on their research (an average of 3.9 papers per faculty member). Our master’s program was ranked 14th in the nation by GradReports, with graduates reporting an average salary of \$81,200.

Wherever this update finds you, I hope you will take a few minutes to read over these highlights.

*Dale R. Tree*

Dale R. Tree, **PROFESSOR AND CHAIR OF MECHANICAL ENGINEERING**

FROM THE CHAIR



RETIREMENT OF ALAN PARKINSON

After 38 years, Professor Alan Parkinson retired on July 1, 2019. Joining the faculty in 1982, Professor Parkinson quickly became an internationally recognized expert in optimization and robust design. He served as the department chair from 1995 to 2001 and guided the department through a time when research increased dramatically. In 2003 he was appointed as associate dean of the College of Engineering with responsibility over undergraduate education, and in 2005 he was appointed dean of the college.

Professor Parkinson served as dean for 11 years. He led the planning, approval process, and design of the new Engineering Building, overseeing and directing a multiyear fundraising effort for more than \$85 million to fund the cost of the building. He is a Fellow of the American Society of Mechanical Engineers and has received many prestigious awards. We wish Alan all the best in his next adventures.



ANNUAL ALUMNI DINNER

At our annual alumni dinner in April 2019, alumni toured the new Engineering Building and alums **James Maughan** and **Mark Martinez** were recognized for their years of service and contributions to the engineering profession.

**James Maughan** (BS '84) completed MS and PhD degrees at Purdue University and then joined GE Global Research. He transferred to GE Power in 1997 and in 2013 became technical director of aerothermal and mechanical technology. Maughan currently leads a new division on the design and manufacture of advanced turbine airfoil components.

**Mark Martinez** (BS '86, MS '87) spent 23 years at Lawrence Livermore National Laboratory. He was the senior test director responsible for executing the lab’s experimental activities at the Nevada National Security Site (NNSS). Martinez is currently the president of Mission Support and Test Services and the site director of NNSS.

Please join us during Homecoming week in 2020 for our next alumni dinner.



ME STUDENT ATHLETES

**Clayton Young (middle)**, a current master’s ME student, won the NCAA Track and Field Championship in the 10,000-meter race, becoming the first BYU national champion in track in 10 years. He was also named the Men’s Outdoor Track Scholar Athlete of the Year.

**Conner Mantz (left)**, a freshman in the ME program, took fourth place in that same 10,000-meter race. Third place went to chemical engineering student **Connor McMillan (right)**.





### FACULTY AWARDS

From left to right: Oliver Johnson, Marc Killpack, Bradley Adams, Andrew Ning, Daniel Maynes, Mark Colton, David Fullwood.

The following faculty were recognized for their contributions to BYU and the engineering profession in 2019.

**Associate Professor Bradley Adams:** student-voted most influential mechanical engineering teacher

**Assistant Professor Oliver Johnson:** MPMD Young Leaders Professional Development Award at the Minerals, Metals & Materials Society Conference

**Associate Professor Julie Crockett:** BYU Karl G. Maeser Excellence in Teaching Award

**Professor Christopher Mattson:** B. Keith Duffin Teaching and Learning Faculty Fellowship

**Professor David Fullwood:** College of Engineering Jim Abrams Professorship

**Associate Professor Mark Colton:** College of Engineering Excellence in Education Award

**Assistant Professor Marc Killpack:** Department of Mechanical Engineering Outstanding Teaching Award

**Assistant Professor S. Andrew Ning:** Department of Mechanical Engineering Outstanding Researcher Award

**Professor R. Daniel Maynes:** Department of Mechanical Engineering Outstanding Faculty Service Award

### FUNDING HIGHLIGHTS

In 2019 the Mechanical Engineering Department and 23 faculty recipients received \$5.7 million in research awards. Highlighted below are four of the awards.

**National Institute of Health:** \$2.3 million to ME professors Anton Bowden and David Fullwood and Life Sciences professor Ulrike Mitchell to tackle the opioid crisis by improving the diagnosis and treatment of lower back pain.

**National Institute of Health:** \$550,000 to ME professor Scott Thomson to direct a multiuniversity study diagnosing, studying, and treating voice disorders.

**National Science Foundation:** \$800,000 to ME professor Marc Killpack and computer science professor David Wingate to develop new methods for modeling and controlling soft robots using machine

learning and optimal control.

**Nuclear Regulatory Commission:** \$450,000 to support Professor Troy Munro and other new faculty in nuclear engineering research; BYU has one of only 11 programs nationwide to receive such an award.

### STUDY ABROAD EXPERIENCES

In addition to traditional on-campus learning, the department offers various study abroad opportunities. Here are several programs that happened in 2019.

**China—Global Leadership:** This six-week experience takes students to visit design and manufacturing facilities across China and develop skills in leadership, globalization, teamwork, and ethics.

**Singapore—Design and Development:** Students visit Singapore to learn about global product design and development. They work with students from Penn State and the National University of Singapore to develop products for global markets.

**Europe—Global Perspectives on Energy and the Environment:** Students visit 20 energy sites in the US, Italy, Spain, Denmark, and Iceland, learning about the connection between environmental issues and traditional and renewable energy.

**South America—Global Product Development:** Students visit Panama, Brazil, Chile, and Argentina, meet with professionals, and learn about design, engineering, and manufacturing in a global environment.



### NEW FACULTY ASSIGNMENTS



In July 2019 Professor Larry Howell was appointed as the associate academic vice president for research and graduate studies at Brigham Young University. Professor Howell joined the faculty in 1994 and is a former department chair and the former associate dean in the College of Engineering.

Professor Tim McLain was selected to replace Professor Howell as associate dean in the College of Engineering. Professor McLain joined the BYU faculty in 1995 and previously served as department chair from 2007 to 2013.

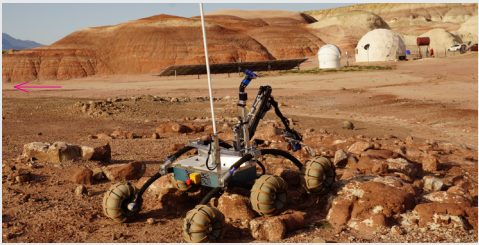
### INTERNATIONAL STUDENT COMPETITIONS



**Shell Eco-marathon Americas:** BYU took 4th with 1,242 mpg and won the Technical Innovation Award and \$3,000 for their work on air-fuel ratio feedback control.



**Intercollegiate Rocket Engineering Competition:** BYU placed 12th out of more than 70 teams and earned an honorable mention for their cold-gas thruster payload. (See full team on cover.)



**University Rover Challenge:** BYU was one of 36 international teams selected out of more than 90 applicants to compete, placing 10th.



**SAE Baja California Competition:** BYU was one of only three teams to advance through the safety inspection on the first pass. Their baja platform was a fan favorite.

### STAY CONNECTED



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Mechanical Engineering alumni website:  
me.byu.edu/content/alumni-home  
Capstone program: capstone.byu.edu