ME HIGHLIGHTS OF 2015

FROM THE CHAIR
Wherever this update finds you, I hope you will take a few minutes to read about our eventful 2015. It marks 25 years since the founding of the Capstone program, which is now a model for senior design courses nationwide. Undergraduate enrollments are at an all time high—1,110—a number sure to grow, as we increase admissions by 30 percent. PhD candidates have increased to 45 students, two new faculty members joined the department, and after several years of fundraising we are looking forward to breaking ground for a new engineering building.

I encourage you to update your information at alumni.byu.edu and to connect with us on social media. We consistently post news to our website, Facebook, and Twitter. Have a wonderful and blessed 2016.

Sincerely,
Daniel Maynes, professor and chair of mechanical engineering

In 2015 Daniel Maynes was named a Fellow of the American Society of Mechanical Engineers in recognition of his significant contributions in fluid mechanics and thermal transport, including transport behavior in superhydrophobic surfaces, microscale liquid flows, and electroosmotic flows. He has coauthored more than 140 publications.

CAPSTONE CELEBRATES 25 YEARS
ASME Award
There is no better way to celebrate 25 years of Capstone success than with a national recognition from ASME. Associate Professor Chris Mattson (left) and Professor Carl Sorensen (right) received the 2015 Ben C. Sparks Medal for their outstanding contribution to ME education through their innovative leadership in developing and directing the Capstone program. Carl Sorensen also received the BYU Alumni Professorship Award for teaching excellence. Over 3,700 students have graduated with hands-on experience in the design/build/test process since 1990, more than 30 academic articles have been published by program directors, and at least 40 other schools have created similar programs.

Project Sponsors
BYU is unique in exempting the sponsors’ educational donations from overhead charges and ensuring that sponsors retain ownership of intellectual property developed. The number of projects completed annually has increased from four in 1990 to 32 in 2015. There have been 260 unique sponsors from 27 states and 12 countries, with 47 percent sponsoring multiple projects. The top five Capstone project sponsors are:

- ATK (26 projects)
- BD Medical Systems (23 projects)
- Boeing (22 projects)
- Burr Oak Tool Inc. (18 projects)
- Autoliv (17 projects)

Alumni Fund Humanitarian Projects
Thanks to the generous donations of a few alumni, the Capstone Humanitarian Endowment Fund has been established. Human-powered water drills, affordable neonatal resuscitators, and solar-powered food/medicine preservation are a few examples of past humanitarian projects. With this new support, Capstone humanitarian efforts will continue to bless others. At its current level, the fund will provide partial support for a 2015–2016 humanitarian Capstone project. We invite alumni to increase the impact by donating at me.byu.edu/content/alumni-home. For information email me-externalrelations@byu.edu.

A NEW BUILDING FOR ENGINEERING
Now that $80 million has been raised for a new engineering building, the groundbreaking ceremony is slated for spring 2016. Construction will take two years, after which Mechanical Engineering will move into new offices and state-of-the-art lab facilities.
**ALUMNI NEWS**

**Troy Schank (BS ’99; PhD Georgia Tech)** recently won the Alfred Gessow Award from the Vertical Flight Technical Society for coauthoring the best technical paper at the 71st International Forum of the American Helicopter Society. Troy currently does research and design in the dynamics department of Bell Helicopter. Troy married his high school sweetheart, Megan Roze (BS ’96); they have four children.

**Mike Trego (BS ’86)** was recently honored with the Honeywell Aerospace President’s Award for his leadership on engine designs for business aviation propulsion. Mike’s love of designing jet engines has motivated his 28-year career with Honeywell. His father and sister are engineers and his daughter is majoring in ME. He married Melinda Chappell (BA ’86), and they have three children.

**Sterling Anderson (BS ’07)** was asked to lead the Model X SUV program shortly after joining TESLA motors. After resolving significant design, cost, and schedule challenges in only 10 months, the vehicle was launched in September 2015. Prior to TESLA, Sterling launched two companies of his own and was a management consultant with McKinsey & Company. He and his wife have three daughters.

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**STUDENT MATERIALS RESEARCH IMPACTS MANY INDUSTRIES**

Seven grants with total funding $XX,XX were given to ME faculty researching materials. All faculty research includes meaningful participation of graduate and undergraduate students, who often coauthor related journal publications. Although materials research takes place on a micro- or nano-scale, it has the potential for “macro” impact on many industries.

For instance, new NSF funding ($375k) will allow researchers to embed newly developed piezoresponsive nano-composite sensors into people’s shoes and clothing, providing gait analysis for patient rehabilitation and athletic training by sending a continuous flow of data to a smart phone.

Another grant ($450k) funds a collaboration with Ford Motors to assist in meeting fuel economy targets. This research will provide a foundational framework of “deformation microscopy” to advance the development of lightweight steels. As a result, auto owners will ultimately be able to travel more miles per gallon while driving cars with the structural and safety advantages of steel.

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**NEW FACULTY**

**Assistant Professor Oliver K. Johnson (BS ’10, left)**, came to BYU after completing his PhD at MIT, where he had a national defense graduate fellowship. His research incorporates theoretical, computational, and experimental approaches to design and synthesize advanced materials.

**Associate Professor Bradley Adams (MS ’85, right)**, came to BYU after 30 years in industry with expertise in technical management and research and development in heat transfer, combustion, and air-pollution control. Current research interests include advanced power generation, radiative heat transfer, and multi-physics simulations.

**GREG JENSEN RETIRES**

**Professor C. Greg Jensen** retired after teaching for 32 years at BYU. He mentored hundreds of students in CAD design and held the Ira A. Fulton College Professorship of Global Engineering. From 2006 to 2010 he directed a PACE project that involved 26 national and international schools in modeling, analysis, and manufacturing of four Formula One–type racecars.

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**DEPARTMENT AT A GLANCE**

**Faculty and Research**

- Added 2 faculty members for a total of 12 professors, 9 associate professors, and 7 assistant professors.
- XX faculty serve as editors for archival journals.
- Faculty published XX papers in professional journals.
- XX proposals were submitted for external funding.
- Faculty gave XX presentations at professional conferences, including XX peer-reviewed papers.
- XX patents were granted, with an additional XX submitted.

**Degrees Granted**

- Bachelor’s XXX
- Master’s XX
- Doctoral XX

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**NEW DISTINGUISHED ALUMNUS AWARD**

The first BYU Mechanical Engineering Distinguished Alumnus Award will be given in 2016 to recognize outstanding engineering achievement in leadership, educational, technical, or humanitarian areas. Letters of nomination should be sent to me-externalrelations@byu.edu.

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**STAY CONNECTED**

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**R. Daniel Maynes, Department Chair**
Anton E. Bowden, Graduate Coordinator Dale R. Tree, Associate Chair/Undergraduate Coordinator

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