

FALL 2017 MECHANICAL ENGINEERING NEWSLETTER

MoMEntum

IN THIS ISSUE:

- [From the Department Head](#)
- [On the Fast Track to Fun](#)
- [Materials Selection Elective Gives Job Seekers a Head Start](#)
- [Rose-Hulman Renaissance Man Retires](#)
- [Learning to Program Robots for a Human-Friendly Workplace](#)
- [Sabbaticals Give Professional Stimulation for Faculty, Ideas for RHIT](#)
- [Engineering Global Experiences](#)
- [New Additions to Mechanical Engineering at Rose-Hulman](#)
- [Capstone Design Sequence Uses Team Approach to Problem-Solving](#)



From the Department Head

Welcome to the fall 2017 edition of the Mechanical Engineering Newsletter, MoMEntum!

We have many exciting things going on in the department (read more below) but there is one key initiative where we need your help. We want to emphasize, to our students and prospective students, the broad range of careers open to ME graduates. So few of them understand *what ME's do!* Our goal is to collect interesting photos and stories from alumni, and use those in our web pages, brochures, slide shows, and perhaps even on the walls of halls, labs, and classrooms. Crystal Meyer ('15) helped us get this started with her contribution, and we've highlighted the exciting work she is doing at The Gravity Group, LLC. Read her story, and then please use the link below to contribute your photos and stories!

CONTRIBUTE YOUR STORIES!



On the Fast Track to Fun

A series of internships led Crystal (Hurtle) Meyer '15 to a career in roller coasters. She takes us along for the ride in recounting her work and travels.

Since graduating in 2015, Meyer has been living her dream as an engineer with **The Gravity Group**, a roller coaster design and manufacturing firm located in Cincinnati. Her job has given her "challenging and amazing experiences" and taken her as far as Norway and China to visit project installations.

Crystal says: "This photo was taken in 2015 in Jinan, China, working on one of our newest rides at the time, Jungle Trailblazer. I travelled to China with my boss to finish the installation of our roller coaster trains (involving a lot of wrench-turning) and help train the local maintenance staff (involving simplifying explanations to make it through a Mandarin interpreter, miming, and learning a new culture). I worked mostly on the ride vehicles during this trip, but the wooden structure (and the surrounding Chinese landscape) is quite an impressive sight."

Alumni: Please take a moment to **Tell Us Your Story**. We'll share stories with your permission.

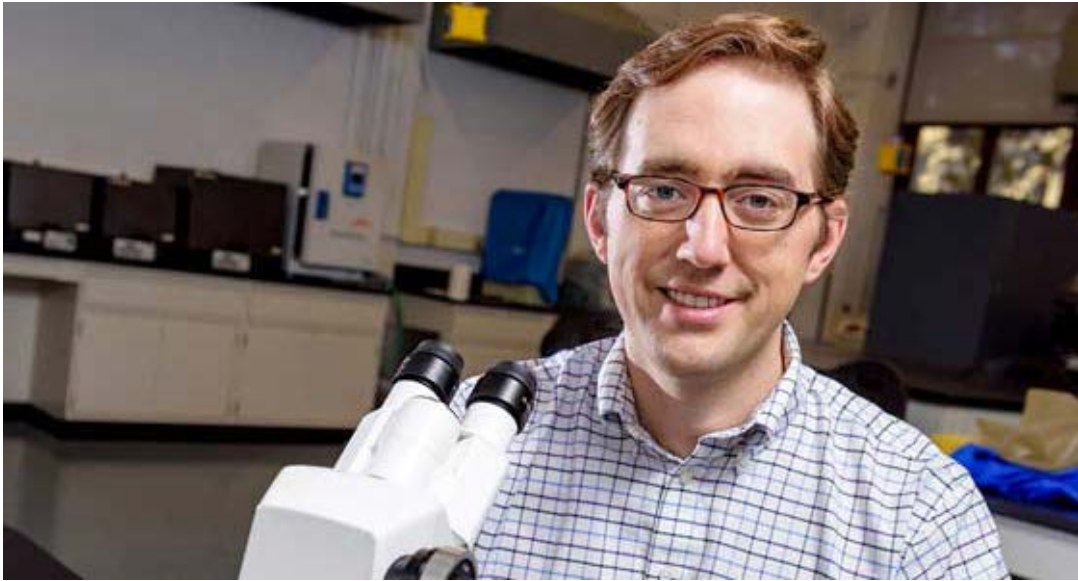
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Mechanical engineers are creating the future in hundreds of different ways.

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Materials Selection Elective Gives Job Seekers a Head Start

Dr. Patrick Cantwell's elective course Materials Selection in Mechanical Design (ME497) gives students a bigger dose of real-world experience, making them more competitive in the race for post-graduate employment.

While engineering materials courses traditionally cover properties of materials, ME497 equips mechanical engineers to select materials giving consideration to properties such as strength, weight and stiffness, and also to cost. It's based on Michael F. Ashby's comprehensive approach that revolutionized materials selection.

"Some companies have an experienced materials selection specialist on staff," explains Cantwell, assistant professor of mechanical engineering. "This class gives students a systematic method for making materials choices that they can apply right away, and does not require years of practice and experience. We teach students how to select materials by analyzing combinations of relevant properties. The method also treats cost as a material property. You often need to minimize cost while meeting all functional requirements."

Some who've taken ME497 may incorporate materials selection into their capstone projects, or serve as consultants for peers who need such insight for their own capstone

design projects.

According to Cantwell, whose groundbreaking research was **recently published in *Science***, students are excited by the practicality of the course, telling him "I feel like I can go out and use this with an employer."



Rose-Hulman Renaissance Man Retires

Andrew Mech reflects on three decades that transformed the institute and its students.

"What sort of an engineering college has a rotating art exhibit?" asks Professor Andrew Mech. It's a rhetorical question with a simple answer—only Rose-Hulman. Mech's skills in music and wordplay complement those in thermodynamics, renewable energy systems, fluid mechanics and more. He is a Rose-Hulman Renaissance man and a longtime contributor to the institute's humanities-infused culture.

Mech retires this fall after 31 years on the mechanical engineering faculty. "I grew up in a humanities family," he says, "so I was an anomaly." His father was a bass-baritone performer and teacher at Indiana State University, and his mother was an artist. Mech's musical skills came in handy when Rose-Hulman became co-ed and it was time to update the alma mater, "Men of Rose," which had been originally written by his dad.

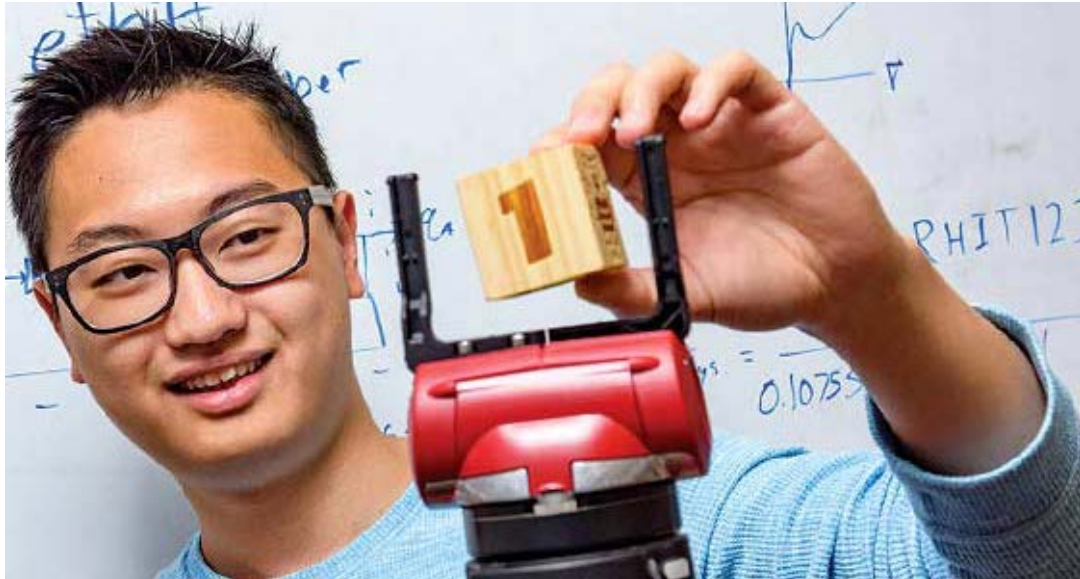
Mech credits former RHIT President Sam Hulbert for advancing a culture which encourages cross-departmental cooperation. Mech recalls that, with two other professors, he developed a fluid science learning center at minimal cost. When Hulbert saw what it could mean for the students, he encouraged the three to apply for a grant that funded it to the tune of \$200,000.

"There's still a closeness between the faculty and staff, and I think that's a good role model for the student. You don't have that at other institutions."

Asked about his reputation for humor and wordplay, Mech explains they can catch students' attention in a world of digital distractions. "They look at you like, 'Did he really

just say that?' If I can keep their attention just a little bit more, then that's fine." His father modeled the love of students, especially those struggling. "He picked them up, dusted them off, and put them back on track. I have tried to do the same."

Always a man of many interests—he's worked at an Army research lab, served as a consulting engineer, and taught at a penitentiary—Mech plans to keep up diverse, service-driven work in retirement, including his church and mission work. At present, he is working with a student on a project for an orphanage in Honduras. Summing up his career, he says, "God opened a number of doors, and I had the choice of walking through or not. He will open some more in my future."



Learning to Program Robots for a Human-Friendly Workplace

Students in Ryder Winck's ME497 class are learning about cutting-edge robotics and its application in industry, involving new sensors that allow robots to take on roles their predecessors couldn't safely perform.

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Sabbaticals Give Professional Stimulation for Faculty, Ideas for RHIT

Brad Burchett and Phil Cornwell are fresh off of sabbaticals that took them to the U.S. Army Research Laboratory and U.S. Air Force Academy, respectively. Learn more about how these experiences were beneficial for the professors, the institutions they visited, and Rose-Hulman students.

[READ MORE](#)



Engineering Global Experiences

Engineers are trained to solve complex problems, sometimes taking on challenges that cross borders and span continents. Current students have several opportunities to expand their global experiences through programs like Engineers Without Borders and with the help of the Office of Global Programs.

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New Additions to Mechanical Engineering at Rose-Hulman

We've welcomed two new employees to the department who bring key knowledge and skills to our team.

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Capstone Design Sequence Uses Team Approach to Problem-Solving

Senior design teams are gaining authentic hands-on experiences for real-world clients,

making them better prepared for the field. Learn more about how Jay McCormack is integrating these experiences into the capstone design sequence.

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We welcome your feedback, so please don't hesitate to **contact our faculty and staff** with questions and comments.

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"When you want to know how things really work, study them when they're coming apart."

~William Gibson

