

Winter 2013

## Volume 2013 - Issue 1 - Winter, 2013

Echoes Staff

Follow this and additional works at: [https://scholar.rose-hulman.edu/rose\\_echoes](https://scholar.rose-hulman.edu/rose_echoes)

---

### Recommended Citation

Staff, Echoes, "Volume 2013 - Issue 1 - Winter, 2013" (2013). *Rose Echoes*. 100.  
[https://scholar.rose-hulman.edu/rose\\_echoes/100](https://scholar.rose-hulman.edu/rose_echoes/100)

This Book is brought to you for free and open access by the Other Institute Publications at Rose-Hulman Scholar. It has been accepted for inclusion in Rose Echoes by an authorized administrator of Rose-Hulman Scholar. For more information, please contact [weir1@rose-hulman.edu](mailto:weir1@rose-hulman.edu).



# Echoes

ROSE-HULMAN INSTITUTE OF TECHNOLOGY

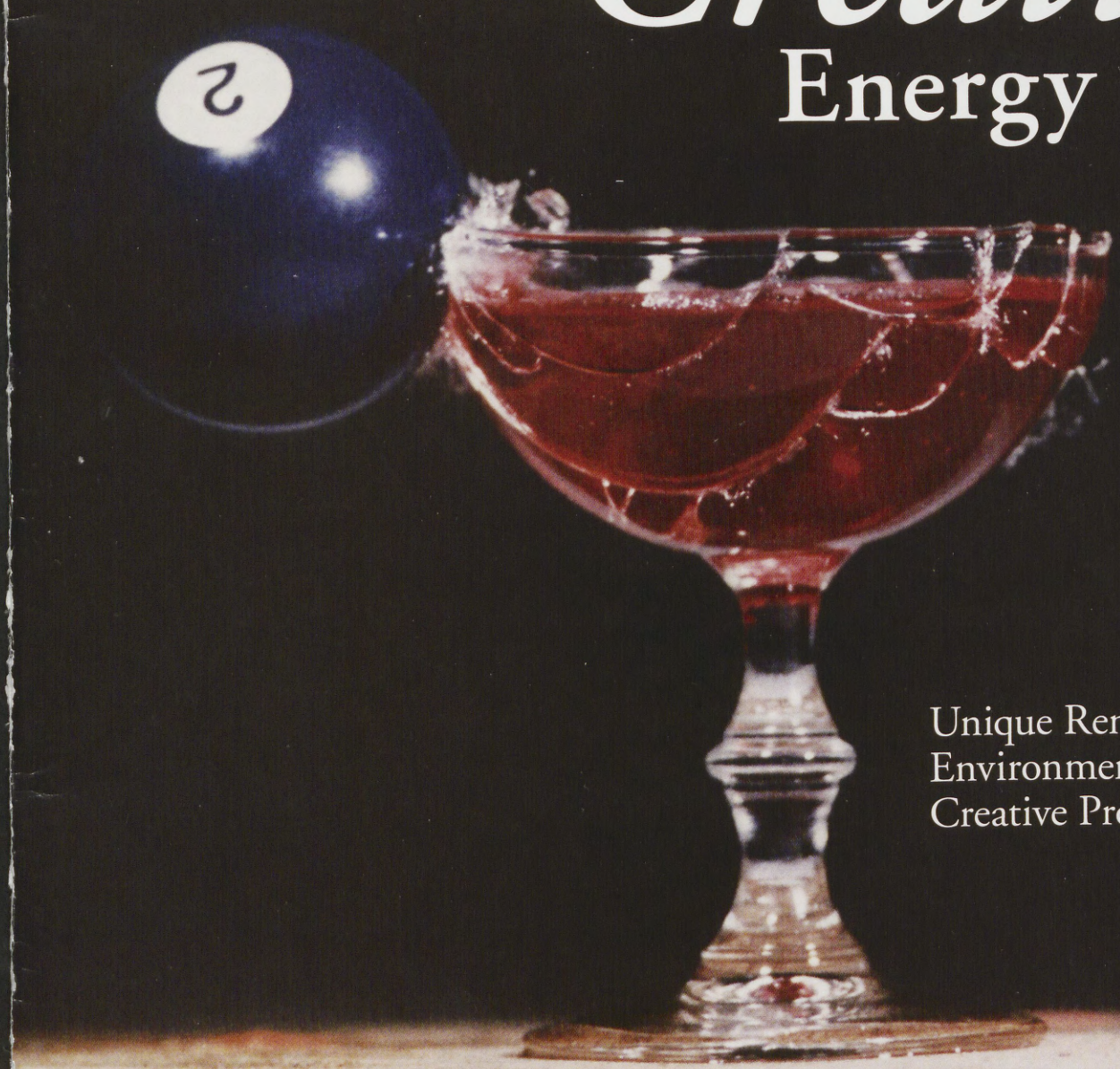
WINTER 2013

Vol. 2013, No. 1

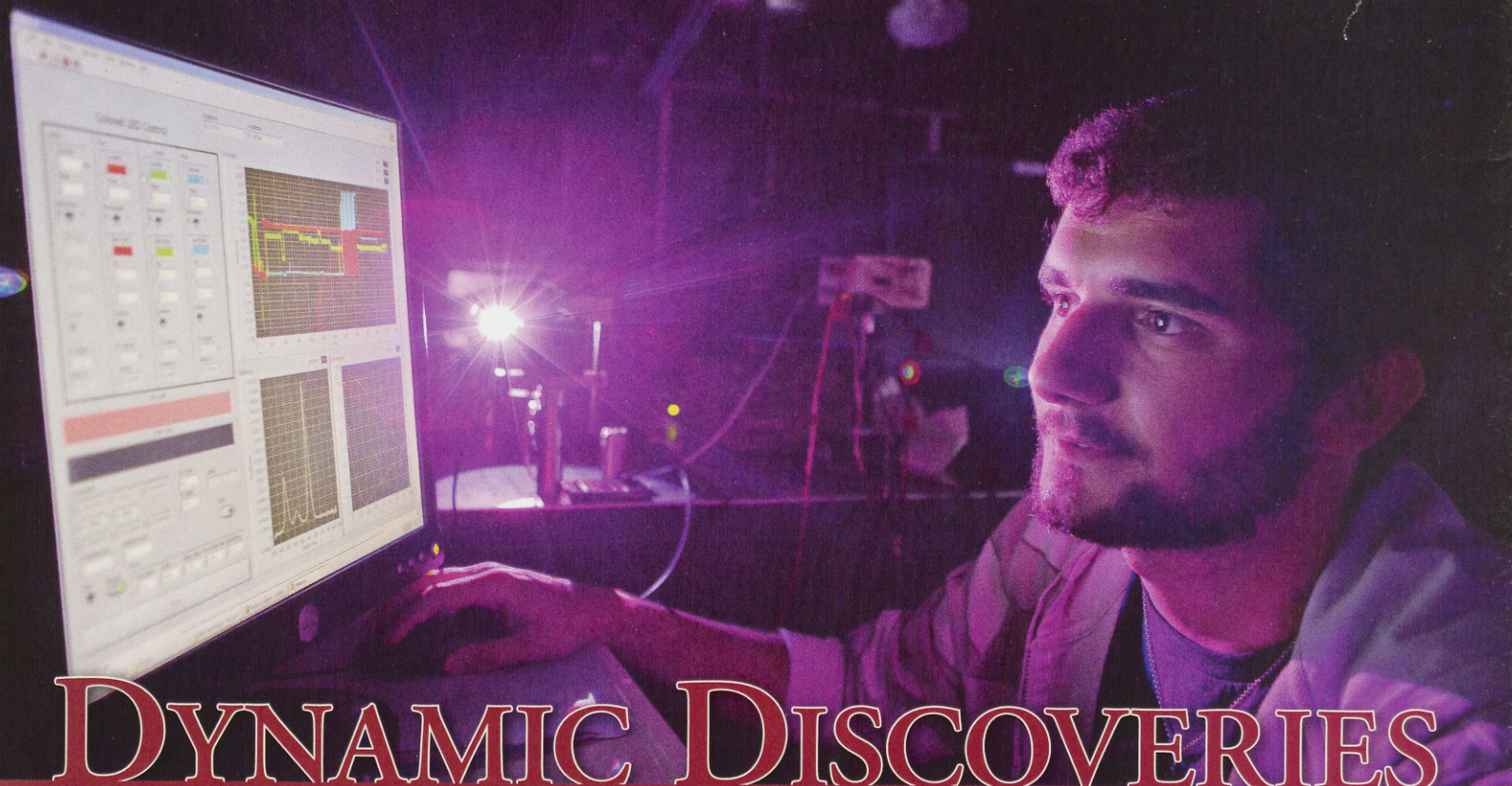
CRACKING  
INTO  
*Creative*  
Energy

2

Unique Renaissance  
Environment Inspires  
Creative Problem Solvers







# DYNAMIC DISCOVERIES

FACULTY, STUDENTS HELPING BREAK NEW  
GROUND IN SCIENCE, ENGINEERING, AND MATH



## STUDENTS USE ORTHOPAEDIC LAB TO STUDY HIP, KNEE REPLACEMENT PRACTICES

A partnership with physicians at the Joint Replacement Surgeons of Indiana (JRSI) Foundation has helped students, faculty, and staff members examine new surgical techniques in partial knee replacement and mechanical deformation of acetabular cups in hip replacement surgery. The research was conducted at the Orthopaedic Biomedical Engineering Laboratory. Four peer-reviewed medical journal publications were accepted from lab projects in 2012, research was presented at national conferences, and JRSI Engineering Director Scott Small (ME, 2005/MSBE, 2007) presented three years of student research at the 2012 Global Oxford Masters Symposium on partial knee arthroplasty. Learn more about what's happening in the lab at [www.rose-hulman.edu/jrsi](http://www.rose-hulman.edu/jrsi).

## RESEARCH TAPS ARTIFICIAL EYE LENSES TO REPRODUCE NATURAL OPTICS

Artificial eye lenses are frequently used to correct various vision problems; however, most are imperfect and act like glasses more than eyes. Physics and optical engineering professors and students have worked with Case Western Reserve University, U.S. Naval Research Laboratory, and PolymerPlus from Ohio to develop a new lens that incorporates thousands of stacked ultra-thin layers of polymer. The layers work to produce a continuous refractive gradient that mimics a real human eye. Casey Kretzer (PH/OE, 2010) performed the design work of the eye model.



## ONLINE MATH JOURNAL PROVIDES VALUABLE FORUM FOR UNDERGRADUATES

For 13 years, Rose-Hulman's online Undergraduate Math Journal has served as a valuable educational resource for collegiate mathematics scholars. In fact, it is the only math publication that allows undergraduate students as authors. The past 26 issues have featured 237 papers by nearly 400 authors from such prestigious institutions as MIT, Princeton, Stanford, and University of Chicago. The journal is edited by Professor David Rader, PhD, and assisted by colleague Tom Langley, PhD. See current and past journal issues at [www.rose-hulman.edu/mathjournal](http://www.rose-hulman.edu/mathjournal).

Learn more at [www.rose-hulman.edu](http://www.rose-hulman.edu)



## columns

Page

Message from the President.....	2-3
Bailey Challenge.....	28

## feature section: creative energy

A Renaissance Learning Environment.....	4-7
Student Feature: Actor/Applied Biology Researcher Alex Cochrane.....	8
Inspiration is Everywhere on Campus.....	9-12
Alumni Feature: David Honan Captures Dazzling Landscape Scenes.....	13
Alumni Photographers Darrell Staggs and Isaac Sachs Capture America's Beauty... ..	14-15
Academic Feature: Flipping the Classroom Enhancing Learning Experiences.....	16-17
Talent Shines on Hatfield Hall Stage.....	18-19
Civil Engineering Professor Jim Hanson Teaches Students to Ask Creative Questions.....	20
Alumni Feature: Entrepreneur Jeff Ready Tipping the Scale.....	21
Rose-Hulman Ventures Helps Entrepreneur Wheel Great Idea to Market.....	22-23

## alumni news

Campus News: Alumnus Felda Hardymon Passes Along Advice.....	24
Orr Fellowships Open Doors for Future Entrepreneurs.....	25
Alumni Photo Album.....	29
Class Notes.....	30-31
Alumni Office's 'Rose on the Road' Program and Schedule of Events.....	32

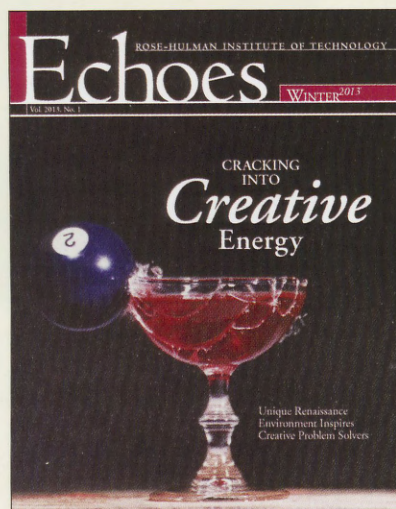
## campus news

Faculty, Students, and Staff Help Make Discoveries.....	Inside Front Cover
Campus News: Global Experiences Expanding.....	24
Graduate School Celebrating 120 Years of Enriching Careers.....	26-27
Development News: Phonathon Benefits Students and Alumni.....	Inside Back Cover
Parting Shot.....	Back Cover

### RoseSTEM Providing Enhanced Alumni Services

We have enhanced our online services to keep alumni connected throughout the world. Through <http://rosestem.rose-hulman.edu> you can find old friends and classmates, help campus locate "lost" alumni, register for social events and other activities, submit your news and class notes, update your contact information, connect through networking and professional opportunities, and live chat with alumni.

Take a few minutes to explore our new RoseSTEM.



### ON THE COVER

Art and science combine in this stop-action photograph that was taken by Joseph M. Forler (EE, 1995) for an assignment in a humanities course during his undergraduate career. The image showcases the point of impact as a No. 2 pool ball smashes into a goblet. Forler is an engineer at AK Steel.



Page 4



Page 18



Page 20



Page 21

### PUBLICATION CREDITS

**Vice President of Communications and Marketing:** Mary G. Barr  
**Vice President of Institutional Advancement:** Rickey N. McCurry  
**Alumni Association President:** Jeff Myers, Class of 1987  
**Office of Alumni Affairs:** James A. Bertoli, Executive Director; Ali O'Leary, Associate Director; and Bretta Schriener, Administrative Assistant  
**Office of Communications and Marketing:** Hyung-Jung Chang, Web Developer and Publications Specialist; Terri Hughes-Lazzell, Marketing Manager; Dale Long, Director of Media Relations; Marianne Messina, Web Content Director; Greg McMullen, Web Assistant; Diann Ringo, Coordinator of Communications and Marketing Activities; and Steve Voltmer, Web Assistant  
**Office of Institutional Advancement:** Chris Aimone, Director of Planned Giving; Dawn Allee, Database Specialist; Dick Boyce, Director of Corporate and Foundation Relations; Juliana Bradford, Executive Assistant to the Vice President; Kathy Cooper, Administrative Assistant in Development; Jason Scott Embry, Executive Director of Development; Grace Findley, Director of Major Gifts; Jodie L. Harmon, Manager of Gift Accounting; Felisa Javier-Holt, Manager of Prospect Research and Tracking; Jennifer Kenzor, Annual Fund Coordinator; Danielle Merkel, Executive Director of Advancement Services; Alan Morrison, Special Projects Gift Officer; and Tammy Schaffer, Director of Donor Relations and Executive Assistant to the Board of Trustees

**Issue Editor:** Dale Long  
**Contact e-mail:** [Dale.Long@rose-hulman.edu](mailto:Dale.Long@rose-hulman.edu)  
**Contributing Writers:** Christopher Adam, Herb Bailey, Terri Hughes-Lazzell, Steve Kaelble, Dale Long, and Marianne Messina  
**Photographers:** Bill Forehand, James Garber, David Honan, Larry Ladig, Dale Long, Samantha McGranahan, Robbie Mayhew, Chris Minnick, Isaac Sachs, Scale Computing, Shawn Spence, and Darrell Staggs  
**Class Note/Alumni News Contact:** Send alumni news and address updates to [alumniaffairs@rose-hulman.edu](mailto:alumniaffairs@rose-hulman.edu)

*Echoes* is published by:  
**Rose-Hulman Institute of Technology**  
 5500 Wabash Avenue, Terre Haute, IN 47803

It is the policy of Rose-Hulman Institute of Technology to admit students on the basis of their academic ability. Rose-Hulman Institute of Technology does not discriminate based on race, religion, color, national origin, sex, age, citizenship status, disability, veteran status, or sexual orientation.



## MESSAGE FROM THE PRESIDENT

Academics and art are showcased as a student finds a quiet spot in the John A. Logan Library to study among the Kappa Kappa Kappa philanthropic sorority's collection of paintings by Indiana artists.



# *Creativity:* It's at the Heart of What We Teach by Robert A. Coons

Imagine a typical day in the life of a current Rose-Hulman student: It's midday, and you've just finished a microcontrollers-based systems class and are ready to grab some lunch. As you near the cafeteria, you hear one of Frédéric Chopin's nocturnes emanating from a baby grand—a fellow engineering student at the piano's keyboard, playing for the sheer joy of it. On the way to your afternoon class, you stop to admire a work of Hadley pottery or the new photo exhibit on the walls of Moench Hall. And you realize ... this is not your average engineering school.

Of course, as alumni, you already knew that. But if you haven't been back in a while, you might be surprised at the many creative outlets that flourish across campus. It's inspiring and invigorating, and it's absolutely no accident. We believe that delivering the most engaging instruction in engineering, mathematics, and other scientific disciplines is not enough. We're committed to sending our graduates into the world infused with a creative spark that will set them apart from their

peers and resonate through both their careers and their personal lives.

We believe in developing the well-rounded engineer, and it's an approach that's a bit unique among institutions such as ours. That focus on creativity begins in the classroom and blossoms throughout the Rose-Hulman experience. We've long aimed to provide what we view as a special brand of engineering education—that is, a solid technical foundation enriched by a healthy focus on creativity, curiosity, and the humanities and social sciences.

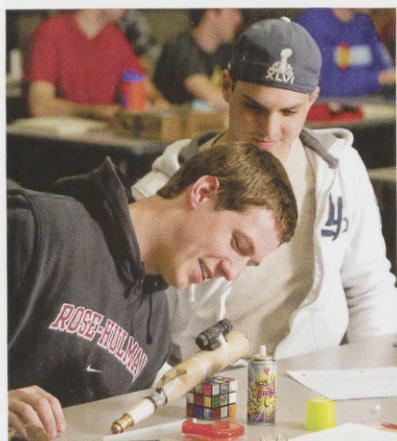




## Creativity Can Be Learned in Many Ways

As we've outlined in the goals of our Strategic Plan 2013-2018, we believe that exposing Rose-Hulman students to a diverse range of information sources will nurture creative sensibilities that are vital for technological problem solving.

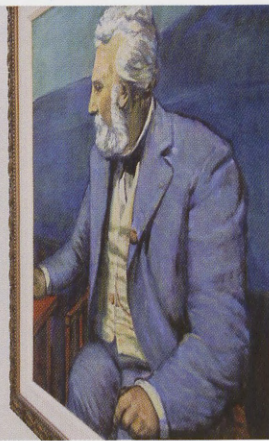
Creativity also thrives within the major-specific coursework all of our students take. Our instructional methods stress hands-on and project-based learning—flexing the creative muscle in our students' minds. Our professors are among the best anywhere when it comes to imparting their knowledge in creative ways—ways that don't simply transfer information but really help students flip the switch of those light bulbs in their brains.



teams to lend their imaginations and talents to real-world client companies. Where else can an undergraduate engineering student have a chance to help develop technology used in brain surgery or mobility innovations for the disabled?

## An Environment That Inspires

We place these many valuable opportunities within an environment that itself encourages creativity with beautiful spaces of architectural significance, punctuated by visual artworks. Rose-Hulman maintains an extensive art collection, and our art curator rotates works among our buildings and offices so that students, faculty, and staff are exposed to a wide variety of art



Creativity can be found everywhere on campus—from hands-on projects in the classroom to the hundreds of artworks on the walls throughout Moench Hall to students showcasing their many talents in drama club productions on the Hatfield Hall Theater stage.

## Our Students are Stars Outside the Classroom, Too

There's no question that our curriculum is challenging. Even so, we believe extracurricular activities are just as important as the basic core, and we strive to ensure that all students have opportunities to branch out. The results are unlike what many might expect to find on an engineering campus.

For example, although we don't have music or theater departments, our students truly shine in these creative worlds. At last spring's drama club production of *The Phantom of the Opera*, I was both proud and astounded to imagine that the talented singers and performers on the stage that night are likely to be involved in tomorrow's technological breakthroughs. If you haven't seen these performers at work, you would be amazed by the level of talent. (Not to mention the engineering prowess showcased in the set designs!)

## Sparkling Creativity Through Challenges

Creativity and technological innovation intersect when our students become involved in competitive team events, such as robotics challenges and the U.S. Department of Energy's EcoCAR engineering challenge. That's why we strongly support student involvement in such activities—they allow our learners to develop and gain confidence in their creativity.

Life-changing creative experiences also happen frequently at Rose-Hulman Ventures, where student interns join project

wherever they go. Why are the workspaces at many technology companies packed with thought-provoking art and imagery? Because these employers know that's how to build an environment that nourishes creativity—and creativity is what drives innovation.

Our learning environment is more than just a pretty place, though. Our newest classrooms are designed for "teaming," equipped to bring inquisitive minds together with one another and with their professors, to create and learn collectively. And, we're using concepts such as the "flipped classroom" to transform learning experiences, so professors can inspire, not just lecture. (See related article on pages 18-19.)

## What Our Students Really Gain

Why do we work so hard to foster creativity at Rose-Hulman? Because in the end, the most important thing we're teaching them is how to create. Whatever their discipline, when they leave here they'll be called upon to problem-solve, to innovate, and to find new ways of doing things that are important to society.

Engineering? Mathematics? Chemistry? Computer science? These are simply the tools they'll use in their creative works. You already know how great we are at teaching outstanding learners how to use these tools. But what really makes Rose-Hulman stand apart is how we inspire these brilliant minds to pick up these tools and truly create the future. ■





FEATURE SECTION:

## *Creative Energy*

Steve Letsinger helps a student visualize an artistic concept during a drawing class.

"Back in the Renaissance, there wasn't any separation between what was an engineer and what was an artist."

—Steve Letsinger, MFA  
Coordinator of Arts Programs/Arts Curator



# A Renaissance Learning Environment

Creative Campus Culture Inspires Students to Look at Things Differently

Story by Steve Kaelble/Photos by Shawn Spence and Chris Minnick

It's impossible to describe Leonardo da Vinci in just a word or two. He was an engineer and a painter, both a sculptor and a scientist, along with being a mathematician and musician. He was the quintessential Renaissance man, as well rounded as one

could possibly be. And, it could be argued that his artistic and creative abilities made his scientific skills that much stronger.

These days, a lot of people think of scientific, engineering, and mathematical skills as being divorced from creative talents—





**"Creativity and innovation are things that drive the American business economy as well as the engineering economy...Creativity and innovation make you an engineer, not just a calculator."**

—Kay C Dee, PhD, Associate Dean of Learning and Technology, Professor of Applied Biology and Biomedical Engineering

segregated into different sides of the brain. Rose-Hulman, on the other hand, draws inspiration from such visionaries as da Vinci and Michelangelo, with the hope of graduating modern-day Renaissance scientists, engineers, and mathematicians.

It's a noble mission.

"Creativity and innovation are things that drive the American business economy as well as the engineering economy," observes Kay C Dee, PhD, associate dean of learning and technology. "A computer can do engineering calculations. But you need a human being to find a way around something that is blocking your path. Creativity and innovation make you an engineer, not just a calculator."

Bill Kline, PhD, dean of innovation, agrees, adding, "Creativity is that key first step in recognizing a problem and imaging something new and different." It's important to realize, however, that creativity doesn't just happen. "What we are trying to do at Rose-Hulman is teach creativity—how to be creative and how to develop solutions that create value." Kline says. "We try to pro-

vide experiences that encourage creativity."

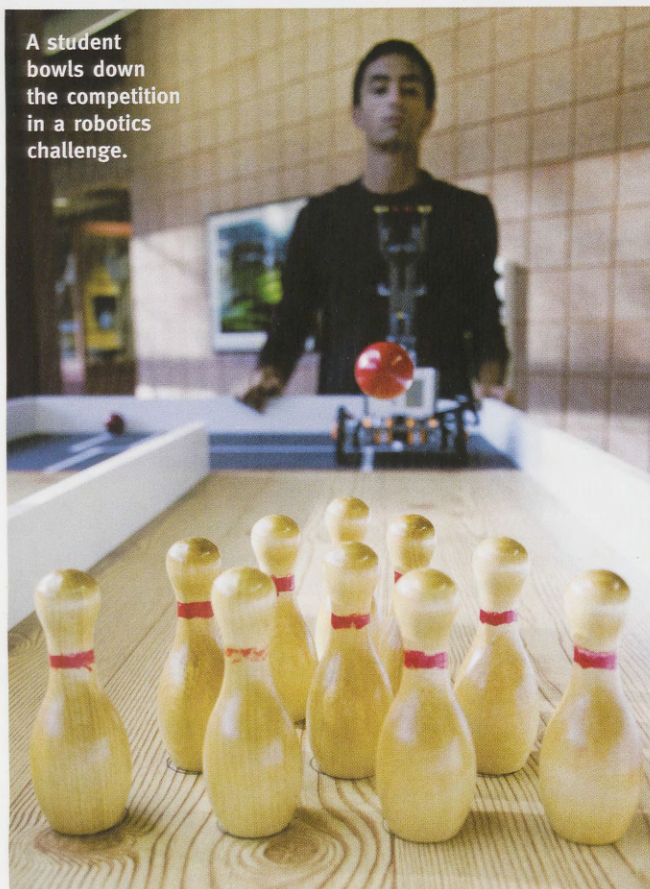
That commitment begins in the curriculum.

"One of the aspects of creativity is being able to take information from a variety of different sources and apply it to the problem at hand," Kline says. For that to happen, he adds that students need to be exposed to a diverse environment of talents, experiences, and disciplines.

Rose-Hulman requires students to take courses in humanities and social sciences. Steve Letsinger, coordinator of arts programs and arts curator, teaches classes in drawing, photography, design and color, art appreciation, and art history.

The drawing course has a direct occupational application for a lot of students, especially those that will become civil and mechanical engineers. One student came to Letsinger's drawing class devoid of self-confidence and finished the quarter knowing the basics. During a job interview, the student was handed a blank piece of paper and asked to draw what was on the desk in front of him. The interviewer explained that "we don't hire

**A student bowls down the competition in a robotics challenge.**



## WHY THE RENAISSANCE ENGINEER?

"In science or engineering, I don't think the technical aspect discourages creativity," observes Patsy Brackin, professor of mechanical engineering. "What happens, though, is that engineers sometimes emphasize following the rules to get an answer to a problem that only has one answer. We don't always emphasize looking for problems that have more than one answer."

Those real-world problems are why Rose-Hulman is so passionate about fostering creativity and encouraging students to draw insights from broad sources of knowledge. By practicing creative problem-solving, students learn to identify insights that they didn't even know they had.

"Often you have the knowledge for some amount of time, but it takes a while to realize it," Brackin says. "Almost all of us have good ideas at some point. We're training students so they can get used to recognizing their insights."

Steve Letsinger, coordinator of arts programs and arts curator, adds, "In this way, engineers and artists are alike. We are both really problem-solvers."

Letsinger thinks the meaning of the word "art" is simply to fit things together well. "That's the epitome of art." Not coincidentally, that's a reasonable description of what engineers accomplish, too.

"Back in the Renaissance, there wasn't any separation between what was an engineer and what was an artist," Letsinger observes, citing Michelangelo as an example. "I believe the hero of this age will be the person who is the artist-engineer or engineer-artist." ■

—Steve Kaelble





## NEW TEAMING CLASSROOMS BUILD CREATIVITY

Beyond culture, curriculum, and extracurricular offerings, Rose-Hulman encourages creativity through cutting-edge learning environments. A great example is a set of new classrooms in John T. Myers Hall.

"Two teaming classrooms are very popular for encouraging teamwork," says Kay C Dee, associate dean of learning and technology. "There are small round tables placed around the walls, chairs around the tables, and on the wall by each table there is a large flat-screen monitor."

Students connect laptops to the classroom network and can project work from their computers onto the nearby screens. "They can flip from laptop to laptop on the display," Dee says. The instructor, meanwhile, can circulate through the room, observing and working with the teams. If the professor spots something at one team's table that's worth sharing with the whole class, flipping a switch makes the work available for all to see.

Other new rooms in the building allow for capturing video and instructors' classroom notes on the board.

"These new teaming rooms encourage creativity by putting products in place for students to work together," Dee says. The environment facilitates more faculty engagement with teams and less straight lecture. "I don't see faculty in front of the room talking very often. It has changed the classroom dynamic—for the student and professor." ■

—Steve Kaelble

engineers unless they can draw."

Learning the basics helped that student land a job, but Letsinger says the drawing class has a much broader goal—teaching students to observe and notice details in the world around them. "I teach them to think differently about things. Don't just notice that there's a dog, a man, and a hat. Notice how they're arranged," he says. Also, students must pay attention to the space between the objects.

The infusion of creativity can also be found in science, engineering, and math classes. "Every time I ask students to solve a problem, I'm looking for creative approaches," says Dee, who is also professor of applied biology and biomedical engineering. "Sometimes I ask them to come up with the craziest idea they can, and we'll look for the nugget of greatness in that craziness.



**CREATIVE DESIGNS:** Students came up with a variety of ideas during on-the-spot design challenges this winter.

Asking for variety is an easy way to encourage creativity."

Creative problem-solving was at the heart of a creative design course taught this winter by Patsy Brackin, professor of mechanical engineering. One on-the-spot design challenge had groups figuring out how to build a span across eight inches using six index cards and a pair of paper clips. One group's concept supported up to 159 pennies.

"Students like to push themselves. We talk about how we want to be more creative, but it's hard to practice being creative," Brackin explains. "It is human nature that we think of an idea and think it's great. Typically, the best idea isn't the first one that we have, so we hope they're getting in the habit of generating multiple ideas."

**"Sometimes just giving people permission to be creative allows them to be."**

—Patsy Brackin, PhD, Professor of Mechanical Engineering





**"Every time I ask students to solve a problem, I'm looking for creative approaches."**

—Kay C Dee, PhD, Associate Dean of Learning and Technology, Professor of Applied Biology and Biomedical Engineering

Rose-Hulman also fosters creativity through a broad range of out-of-class experiences, Kline adds. Various competitions encourage cooperative problem-solving and creativity. Rose-Hulman Ventures gives student interns real-world creative problems to solve. The Branam Innovation Center provides space for project teams to meet, hash out and test ideas, build prototypes, and explore solutions to challenges from robotics, to sustainability, to motorsports. "You can do so much in the classroom, but a lot is learned through experiences where it's OK to try—and OK to fail. Then, you come back and try again."

When it comes to creativity, Kline says, "There's an overall cultural aspect. Is the environment you're operating in nurturing creativity?"

At Rose-Hulman, the answer is "yes." As Brackin observes, "Sometimes just giving people permission to be creative allows them to be." ■

*Steve Kaelble is an Indiana-based freelance writer whose work has appeared in publications nationwide.*

## MINOR PROGRAMS IN HUMANITIES CREATE 'WELL ROUNDED' STUDENTS

Educating scientists, engineers, and mathematicians takes more than an appreciation of the technical elements. That's why Rose-Hulman offers a variety of minors in the humanities to help develop a student's analytical potential.

These opportunities are allowing junior computer engineering student Candice Cornetet to combine her love of science and math with an interest in art. She could have studied at the Art Institute of Chicago but chose to attend Rose-Hulman, where she is on track to earn a minor in art, available since 2009.

"The art minor put my mind at ease that I could continue doing artistic things (at Rose-Hulman) while pursuing my engineering degree," Cornetet says. "The creativity of art and engineering really go hand in hand."



**CREATIVE ENERGIES:** Students are required to take several humanities courses to complement their strong science, engineering, and math abilities.

Gary Turner, visiting assistant professor of music, agrees. He explains that physics is part of acoustics, and ratios are used for determining pitches in musical scales. "Many areas overlap," he says. "It's all based on numbers."

Rose-Hulman also offers minor programs in language and literature, philosophy and religion, and anthropology.

All of this provides learning experiences that, in addition to their intrinsic value, enrich a scientific and technical education. ■

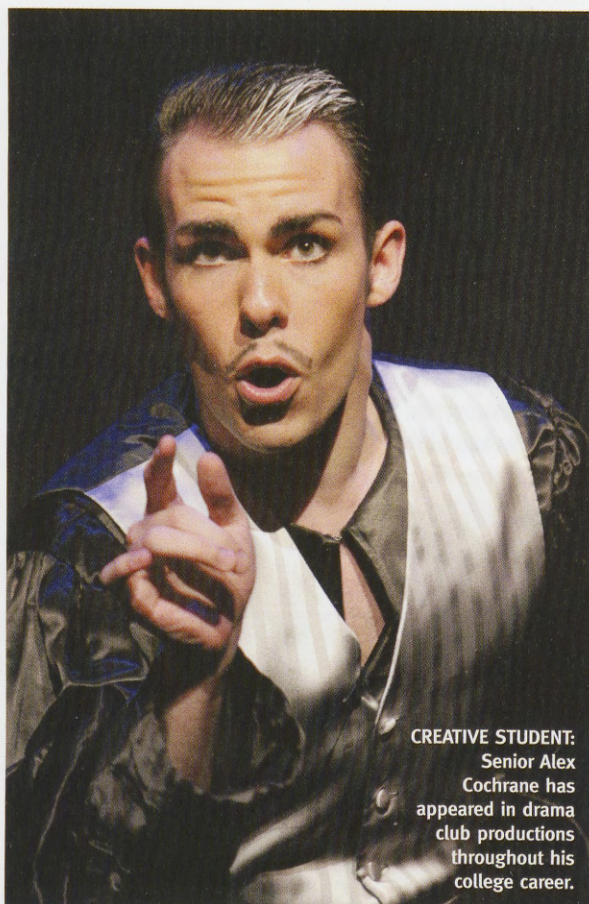
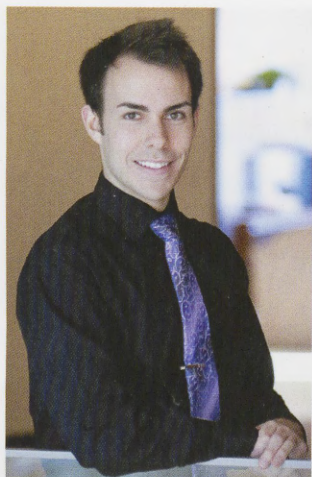
—Terri Hughes-Lazzell



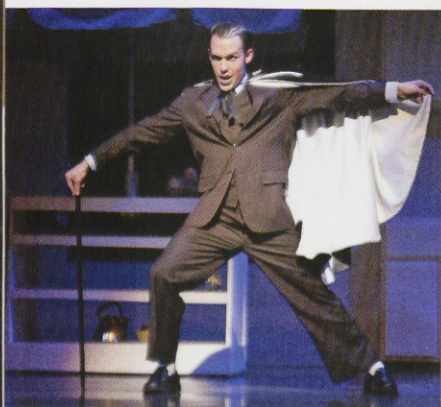


FEATURE SECTION:

## Creative Energy



**CREATIVE STUDENT:**  
Senior Alex Cochrane has appeared in drama club productions throughout his college career.



### STUDENT FEATURE

# Senior in the Spotlight on Stage, in Laboratory

Story by Christopher Adam/Photos by Robbie Mayhew and Bill Forehand

Alex Cochrane has found two stages on campus to showcase his creative expression—in the research laboratory and under the bright theater lights.

Cochrane, a senior applied biology major, believes his acting, singing, and dancing on the Hatfield Hall stage in Drama Club productions has brought forth creativity in the classroom and research laboratory, where his current interests center on immunology and cancer.

"As a budding research scientist, I find the ability to balance competing actions and ideas in the lab is drawn from my stage awareness," Cochrane says. "I often

find the actor in me takes over when trying to relay ideas in science to people."

He has had plenty of opportunities to develop his performing skills at Rose-Hulman. The role of Chip Tolentino in this fall's *The 25th Annual Putnam County Spelling Bee* was Cochrane's 10th Drama Club show. He has also played Monsieur André in *The Phantom of the Opera* and Dr. Horrible in *Dr. Horrible's Sing-Along Blog*.

"I came in as a wide-eyed freshman seeking guidance, friendship, and a challenge for my performance abilities. It has been exactly that," he says.

### MEET ALEX COCHRANE

Senior  
Applied Biology Major  
Bloomfield, Indiana

### ACTIVITIES

- Drama Club President, 2012-13
- Learning Center Freshman/Sophomore Tutor
- Alpha Chi Sigma, Co-Social Chair
- Academy of Dance, Modern Dance IV
- Union Hospital Job Shadow

### AWARDS/HONORS

- Lilly Endowment Scholarship
- Rose-Hulman Dean's List, Every Quarter

### RESEARCH EXPERIENCES

- Applied Biology Department, Rose-Hulman
- Chemical/Biological Engineering Department, Iowa State University
- Department of Immunology, University of Iowa

Cochrane's work in the research lab and classroom involving breast cancer metastases and melanoma cells may seem like a world away from his stage performances, but he says Rose-Hulman offers an ideal environment for combining several interests.

"There's a tight-knit community of scientists and engineers that enjoy creativity and live innovation," he says. "Whether your personal creativity may lie in performing or visual arts, writing, athletic expression, or even laboratory research, Rose-Hulman not only supports it, but also celebrates it."

He has applied to medical schools across the country and plans to pursue a physician-scientist career track. He would like to eventually work as an oncologist or allergy/asthma physician and research the malfunctions of the immune system.

"He is the student of our 2013 (applied biology) class with the most focused professional goals, a plan to accomplish those goals, and, most importantly, the ability to accomplish those goals," says Ella Ingram, PhD, associate professor of applied biology. "He will be an important contributor to medical science and a compassionate medical professional." ■

*Christopher Adam is an Indiana-based freelance writer.*





# Inspiration is Everywhere

From the moment you arrive on campus, you know that Rose-Hulman is a place that takes creativity seriously. *Echoes* examines many places where creativity serves as inspiration to our students, faculty, staff, and campus visitors.

By Marianne Messina

## Sculptures Cover Landscape

The visually striking *Flame of Millennium* sculpture greets visitors along the campus entranceway. Created by world-class sculptor Leonardo Nierman, the abstract, stainless-steel sculpture stands 25 feet tall and weighs more than seven tons. The piece represents a flame in the wind as the source of light bringing wisdom and clarity in the new millennium.

Elsewhere, the *Self-Made Man* sculpture, created by Bobbie Carlyle, stands proudly in front of the Sports and Recreation Center. A steel sculpture near Olin Hall is both art and a hands-on learning tool, with various structural members and connection methods used



**MIRRORED IMAGE:** Artist Aleksandra Krasutskaya's *Elusive sElf* sculpture is a recent addition to a campus garden.



**CAMPUS CANVAS:** Landscape sculptures created by world-renowned artists can be found throughout campus.

by engineers and contractors. It is believed to be the only sculpture of its kind fabricated by civil engineering students. It honors the late professor Cecil T. Lobo.

The latest addition to the campus' landscape art collection is *Elusive sElf*, a sculpture by artist Aleksandra Krasutskaya that's displayed in the Olin Advanced Learning Center's Friendship Garden. It features the figure of a lady pieced together by mirror fragments. These mirrors allow the artwork to take on different points of view, and you might think you are actually looking right through her. "She mirrors you and mirrors the environment," Letsinger says. "She changes every day, like our own human personalities."



**Flame of Millennium**





## Artwork Is Everywhere

No matter where you turn on campus, artwork from different eras and genres covers nearly every hallway and office wall. Imaginations are piqued by 19th-century British watercolor paintings in the Hulman Student Union, ceramic works by the late Mary Alice Hadley in (most appropriately) Hadley Hall, and paintings and crafts by Indiana artists in the Logan Library from the Tri Kappa sorority's permanent collection.

There are also paintings by former Hoosier artist D. Omer "Salty" Seamon, paintings and bronze castings depicting scenes of the American West from the Swango Western Art Collection, and seasonal art exhibits by Wabash Valley artists.

"We're the region's largest art museum," says Art Curator Steve Letsinger. "Art says, 'open the door, open the door to the possible.' We hope students take away the curiosity of the creative process."

**ELEPHANT TRACKS:** Rosie, the college's elephant mascot, greets students and other campus visitors to Olin Hall. This mural was created by artist Pat Grigg.



**FUN ATMOSPHERE:** Associate Mathematics Professor Diane Evans' Crapo Hall office is filled with playing cards (of all sizes), dice, and angle-shaped cushions.

## Offices Offer Creative Refuges

One of the hallmarks of the campus educational experience is the ability for students to meet their professors before and after class to better understand academic concepts and homework problems. These sessions are conducted in a welcoming environment that's filled—literally—with additional learning experiences.

Mathematics Professor Diane Evans' interests in problem solving are reflected throughout her Crapo Hall office. You can find an assortment of dice, playing cards, a mathematical clock, and angle-shaped cushions.

"I want an inviting and fun office atmosphere that makes the students feel at ease. Hopefully, it is reflective of my spirit and enthusiasm for education," says Evans, one of six Rose-Hulman professors recognized last year among America's best 300 professors by The Princeton Review.

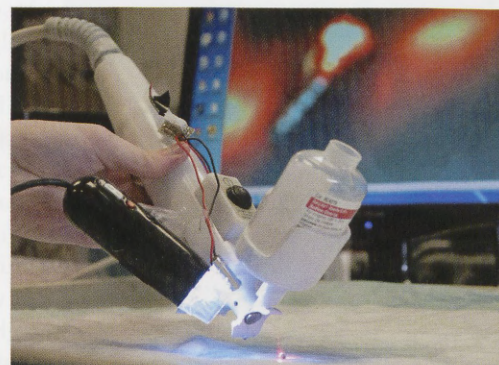
Other faculty offices may look cluttered, but that's not the case, according to Don Richards, PhD, professor of mechanical engineering. His office in Moench Hall is filled with academic publications, student homework papers, and educational awards. "There's a place for everything, and everything has its place," he says.

## Creating Life-Saving Devices

The engineer, scientist, and entrepreneur share a vision that is creating life-saving devices by the hands of student interns, project managers, and faculty members at Rose-Hulman Ventures, located on the institute's South Campus.

Optical, mechanical, and electrical subsystems were developed for an instrument that allows healthcare professionals to accurately measure kidney function with a device appropriate for the clinical setting. A new surgical tool may prove to be the missing cornerstone of the neurosurgical market. An improved robotics system has provided a more cost-effective automation solution for the client company.

At Rose-Hulman Ventures, students enter a creative environment that models the industrial world. They are interns working on real projects in designated work areas patterned after the companies for which they work.



**LIFE-SAVING DEVICES:** Students, staff, and faculty have created several ground-breaking medical devices at Rose-Hulman Ventures.





"This quirky part of our identity is more than just a humor page. It's a personal way of reminding ourselves that life isn't always homework and studying."

—Marcus Willerscheidt  
Rose Thorn Editor

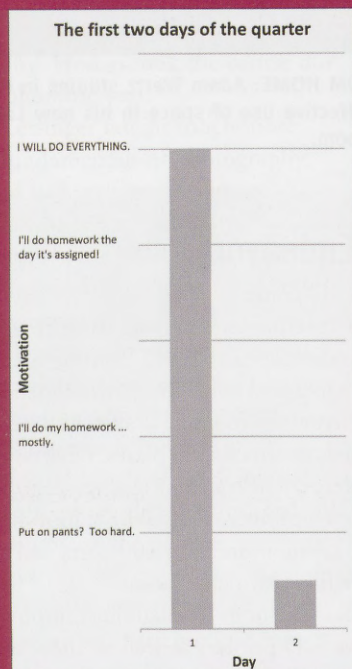


### NEWS Student Creativity: The Flipside

The campus' funny bone is itched through cartoons, Top 10 lists, satire-filled essays, and Wacky Professor Quotes published on the Flipside, the back page of the weekly *The Rose Thorn* student newspaper.

A recent Flipside story carried the headline "Has the World Ended? Our Experts Say Yes!"

A Top 10 List of failed engineering romance novels carried such titles as "Math, Actually, Sets on the Beach," and "Brokeback Backpack."



Cartoons and graphs are part of the weekly Flipside page in the student newspaper.

### Weekly Jam Sessions

Bluegrass music, old-time mountain music, or other forms of acoustic sounds are the core of weekly jam sessions by students, faculty, and staff members organized by David Voltmer, PhD, electrical and computer engineering professor emeritus/banjo player extraordinaire.

"It's a fun group of people from many different musical interests," he says.

Then, one Saturday each month, Wabash Valley pickers and singers gather in Moench Hall's GM Room for jam sessions as part of the Wabash Valley chapter of the National Crossroads Bluegrass and Acoustic Music Association. These sessions started in the 1980s and have produced musicians that are now performing on the national stage.

"Where there's bluegrass, bluegrass players go," says Voltmer, who hosted a bluegrass radio show, "Rosey's Pickin' Parlor," on campus station WMHD-FM from 1982 until retiring the program last fall.



**MUSICAL EXPRESSIONS:** Weekly jam sessions in a Moench Hall laboratory allow students, faculty, and staff members to play a variety of musical styles.

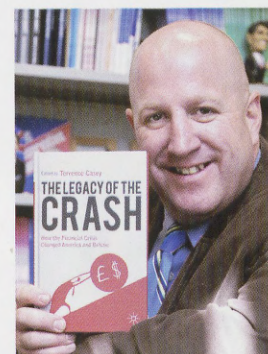
### Faculty Expertise Put in Print

Besides being recognized as outstanding teachers, faculty members are also scholars in their fields and have authored or contributed to more than 200 books in circulation throughout the world.

Now in its fifth edition is the popular *Discrete and Combinatorial Mathematics: An Applied Introduction* textbook written by Mathematics Professor Ralph P. Grimaldi, PhD.

Mark A. Yoder, PhD, professor of electrical and computer engineering, is co-author of *DSP First: A Multimedia Approach*, a class-test, hands-on, multimedia package that has introduced discrete-time systems to beginning engineering students.

One of the most recent books is *The Legacy of the Crash: How the Financial Crisis Changed America and Britain*, by Terrence Casey, PhD, head of the Department of Humanities and Social Sciences and professor of political science. The book provides a sophisticated account of how the American and British administrations are faring following the financial crisis in September 2008. It also looks at the challenges of governing in the new "age of austerity."



Terrence Casey





## Residence Halls Reflect Students' Interests

Campus residence halls are students' "home away from home" and reflect their personality and creativity. Lofts are always a popular source of pride and make effective use of space.

Jacob Kabealo, a sophomore member of the cross-country team, hangs worn-out running shoes throughout his campus apartment. Nearby is a map that points out his many long-distance running excursions throughout the United States.



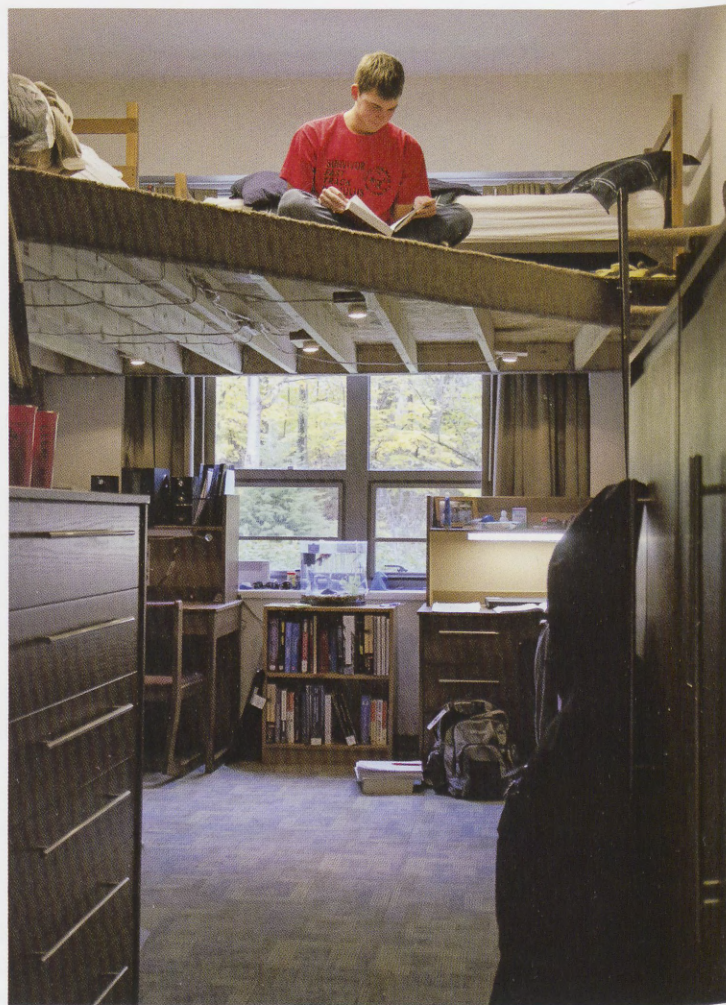
**WINTER WONDERLAND:** Freshmen Austin Mroz (left) and Jesseca Weeks won this year's holiday decorating contest by filling their Baur-Sames-Bogart residence hall room with an artificial igloo, snowflakes, and a snow globe.

globe (the interior window frame). The room earned first-place honors in a campus contest.

Other rooms have aquariums, soothing miniature waterfalls, posters, artwork, and exotic light fixtures.

"You name it, you'll see it somewhere on campus," says Erik Hayes (ME, 1997/MSME, 2000), assistant dean of student affairs.

Freshmen Jesseca Weeks and Austin Mroz got into the holiday spirit this year by decorating their third floor Baur-Sames-Bogart residence hall room with an igloo, snowflakes, ornaments, and a sleigh. They even showcased their engineering skills by creating an interior snow globe with a hair dryer blowing snowflakes around the



**HOME AWAY FROM HOME:** Adam Wertz studies in the loft he created for an effective use of space in his new Lakeside residence hall room.



**UNLEASHING CREATIVITY:** Graduate student Michael Bell created a 3-D Printing Station in a public workspace in Moench Hall.

## After Class Endeavors

If you build it, they will come.

That was the idea of enterprising graduate student Michael Bell (CPE, 2012), who developed the 3-D Printing Station in a public workspace in Moench Hall through the Independent Project/Research Opportunity Program. It allows students to convert computer models to small-scale plastic objects, like iPhone covers, game pieces, and jewelry.

Since opening in late December, the public station has been used 20 hours a day to create more than 100 parts and objects. Training seminars have filled two classrooms.

"We have common laser printers throughout campus. I thought, 'Why not have 3-D printers as well to allow students to create whatever they want, whenever they want?'" Bell says. "Really, I haven't been surprised by the great response from students. They're always looking for ways to create things." ■





# Alumnus Frames Love of Trains

David Honan Uses Photo Skills to Capture Dazzling Landscape Scenes

By Steve Kaelble

Since he was a child, David Honan has had a passion for trains. Today, they're a big part of his life, thanks to the professional training and creative inspiration picked up at Rose-Hulman.

Honan, a 2005 civil engineering alumnus, found himself working on rail-transit projects in the Seattle office of HDR Inc., a global architectural, engineering, and consulting firm. It would certainly seem like a dream come true for someone with a childhood interest in trains.

But that's just part of Honan's rail tale. The second part also began in a Rose-Hulman classroom, where Coordinator of Art Programs Steve Letsinger was teaching photography. Honan took the course during his sophomore year.

"Steve Letsinger taught much more than the fundamentals of photography. He showed us how to see an image so you can use the camera to capture it," Honan recalls. He learned about lighting, textures, shapes, and composition. "I went from being a guy that pointed a camera to thinking about what I wanted to capture and then making a photograph."

Honan's photographic subject of choice was trains, of course. He has traveled around much of the Pacific Northwest, tracking down stunning rail scenes, composing the picture he wants, and then waiting for trains to power their way into the viewfinder. He has shared his work with friends and family members, posted photos online at DaveHonan.com, created calendars, and three years ago won *Trains* magazine's annual photo contest with a breathtaking



**AWARD-WINNING PHOTOGRAPHER:** David Honan (CE, 2005) has combined his passions for photography and trains into images that have been featured in *Trains* magazine.

wintery shot of the Foss River rail bridge near Skykomish, Washington.

Blending engineering with art makes perfect sense for the naturally creative Honan, who grew up in a family of artists. For one thing, he says his train photos often depict in a picturesque way the engineering work that goes into the rail line. "I don't photograph the train as much as the scene through which the train is going," he points out.

But he also feels that learning to exercise a creative side pays off when working in engineering. That's because the most obvious

solution to a problem isn't always the best answer, and it takes creativity to move one's mind down a less-traveled path. "If you can apply creative thought, if you can think about a problem without the bounds of what seems most obvious," he says, "you can come up with a solution for getting from point A to point B that's a better result." ■

*Steve Kaelble is an Indiana-based freelance writer.*

View more of David Honan's photography on pages 14 and 15.



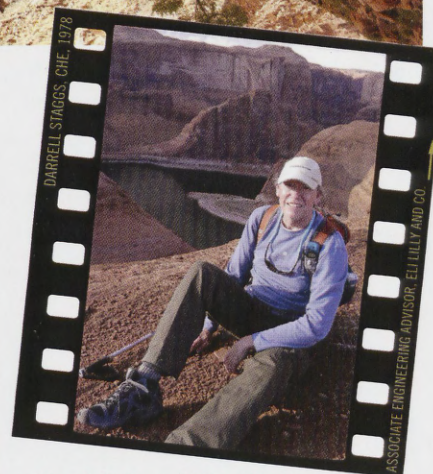
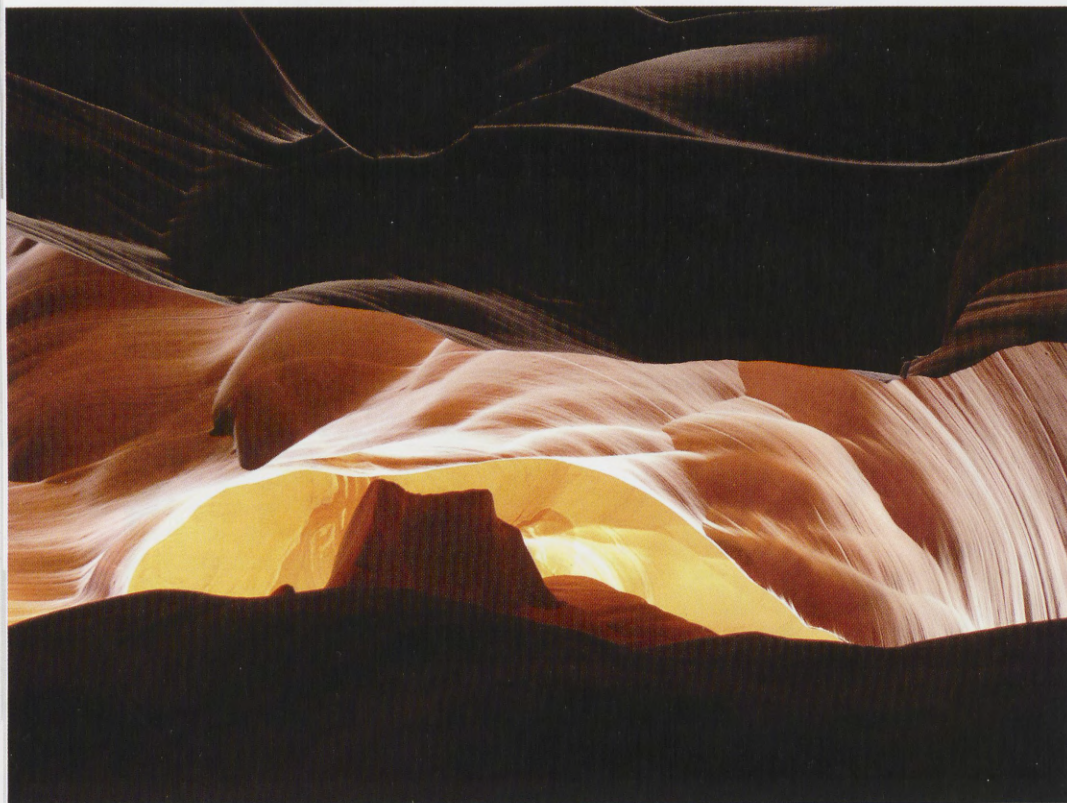
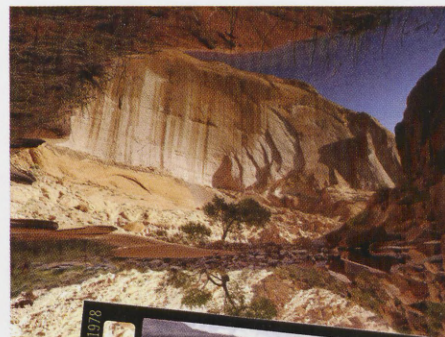
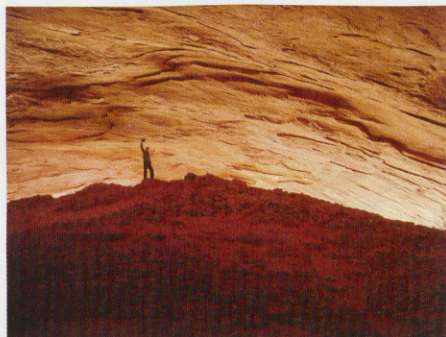


FEATURE SECTION:

## *Creative Energy*

# Through An Engineer's Eye

Alumni Photographers Focus on the Beauty That's Around Us



**Darrell W. Staggs (CHE, 1978)**  
**Associate Engineering Advisor,**  
**Eli Lilly and Company**

Darrell never thought of himself as an artist, but always liked the idea of photography. In the later stages of his career, and after raising his family, he started taking photos while traveling. He started picking up on "textures" in natural scenery and "perspective," and then learned more about composition. "I have learned that it takes more than just holding down the button, and I still have a lot to learn," Darrell says. These photos are from two trips to the Lake Powell/Glen Canyon National Recreation Area in Arizona and Utah.

Additional images by  
David Honan (CE, 2005)  
See profile on page 13.







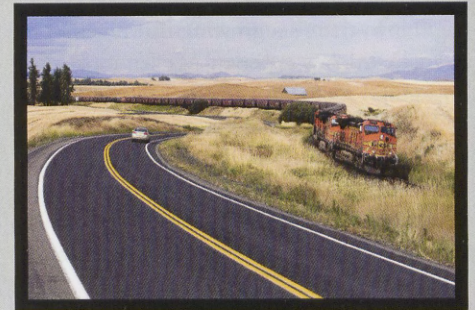
**"I have learned that it takes more than just holding down the button, and I still have a lot to learn."**

—Darrell W. Staggs (CHE, 1978), Associate Engineering Advisor, Eli Lilly and Company

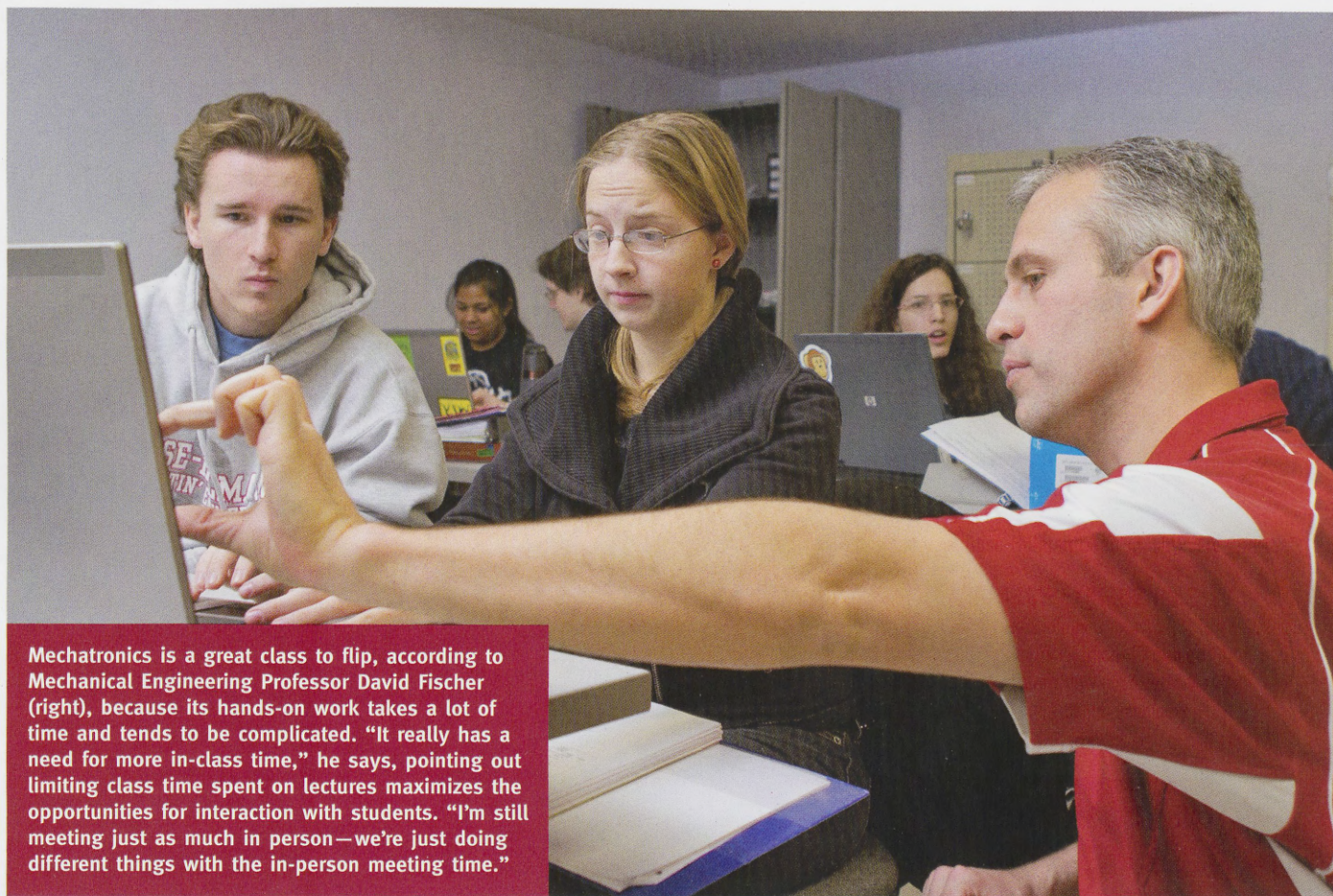


**Isaac Sachs (EE, 2008)**  
**Software Engineer, eBay**

The camera is never far from Isaac's reach and he finds objects to photograph around every corner of his world. Photography has been a hobby for nearly a decade and he's largely self-taught. He is primarily interested in exploring, as a theme, landscapes and how they are altered or arranged by humans. He prefers large-format film photography because of its contemplative nature, which allows him to carefully consider the elements that go into each picture.







Mechatronics is a great class to flip, according to Mechanical Engineering Professor David Fischer (right), because its hands-on work takes a lot of time and tends to be complicated. "It really has a need for more in-class time," he says, pointing out limiting class time spent on lectures maximizes the opportunities for interaction with students. "I'm still meeting just as much in person—we're just doing different things with the in-person meeting time."

## Flipping the Classroom

Professors Offer Online Resources to Enhance Learning Experiences

Story by Steve Kaelble/Photos by Shawn Spence

It's a time-honored tradition in teaching: Stand in front of a classroom and deliver a lecture, students transcribe furiously, homework is assigned to give students a chance to apply what they've learned. Rose-Hulman professors have defied this tradition for many years by including active learning and minimizing notetaking. Now, there's a growing movement to make in-class experiences even more engaging.

The concept, known as the "inverted" or "flipped" classroom, is really pretty simple. Lectures happen online, not in the classroom, and students watch them on their own time before class. Then, there's

more time in the classroom to apply concepts in individual or group projects, while the instructor is available for one-on-one and group sessions with students.

"There are some activities where it makes sense for both the students and me to have a two-way conversation," says Mechanical Engineering Professor David Fisher, PhD, who has "flipped" a mechatronics class. "There are times information needs to be conveyed and one-way lectures are appropriate. In those cases, we don't have to be in the same room at the same time."

Fisher, a 2000 mechanical engineering alumnus, has posted lectures on the

Internet. Then, students are given a quiz over the video to ensure they are getting basic educational concepts, and Fisher spends the rest of class working with students and answering questions.

These enhancements to the classroom experience are key to the inverted classroom concept, says Phil Cornwell, PhD, vice president of academic affairs. He notes how the institute supports excellence in teaching, innovation and intellectual growth—in and out of the classroom.

"If there is a passive portion of a class, that's an ideal opportunity to post it online and better use the time in class for





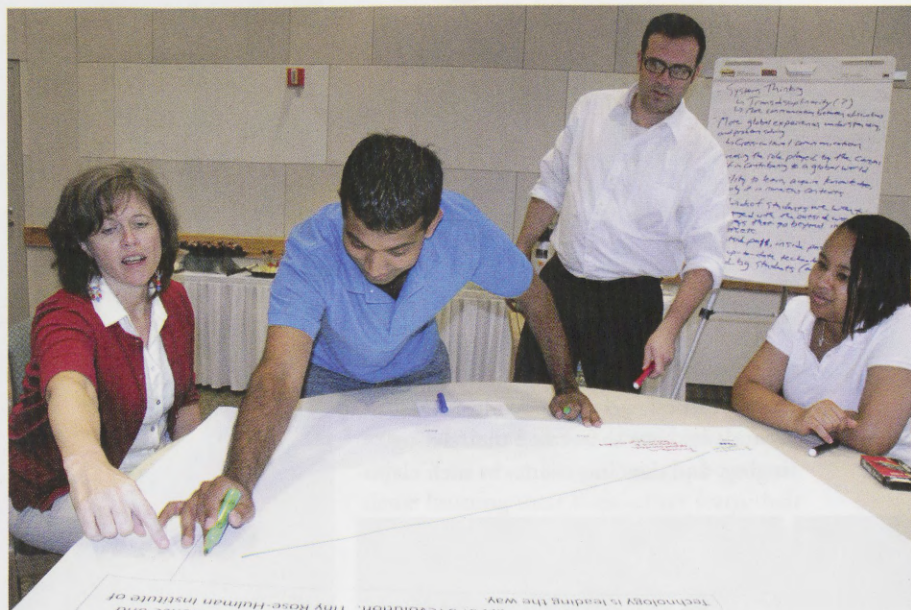
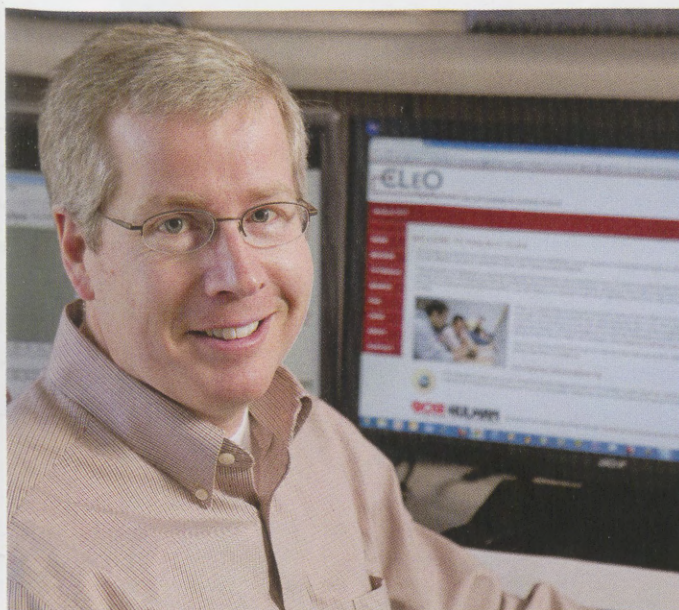
more engagement,” says Cornwell, adding that the concept builds nicely upon Rose-Hulman’s emphasis on applied learning.

The unflipped method essentially assumes that students have little background information before walking into the lab or classroom. “You pretend they know absolutely nothing, you lay the groundwork, and by the time you get there it seems like there’s not enough time in class to take on another example,”

where students are asked to pause the recording and try working out a problem. Students can also work at their own comprehension level. “The video lecture is perfectly paced. You’re never waiting, and you’re never rushed,” he says.

Many students appreciate the opportunity to adapt online learning to their schedule, and they’re familiar with online technology. “You learn the material better,” says Max Eboch, a senior in mechan-

dependent.” Professors at Rose-Hulman have long been encouraging students to pick up information outside of the classroom, then bring that knowledge for interactive learning and discussion. “I could lecture to you about this scientific article, but instead I will ask you to read it on your own at home, look things up, and talk to other students. Then in class, we can argue, debate, and see if we can design the experiment better,” Dee says.



**Ed Doering (above, left), professor of electrical and computer engineering, developed the Circuits Learned by Example Online project. The website has more than 250 examples covering a two-semester course sequence in engineering linear circuit analysis, including AC and DC circuits, phasors, op amps, transients, power, and Laplace-based analysis. Rose-Hulman professors (above, right) are always looking for innovative ways to raise the bar in undergraduate science, engineering, and math education.**

observes Ed Doering, PhD, professor of electrical engineering and computer engineering. He has been producing video-based materials for more than a decade. The approach for the videos is, “Let’s lay the groundwork, so that when you come to class you can hit the ground running, and we can move into a more immersive example.”

Posting lecture-type materials online offers the chance to enhance understanding of that content too, Doering says. “With an asynchronous learning model, they can pause, replay, and try to study a certain area so that it makes more sense.”

Fisher’s online lectures have places

ical engineering and former student in Fisher’s mechatronics class. “There’s a lot more direct questioning going on. The time you get with the professor is more focused on what you need to learn.”

It’s even useful to flip a class meeting that doesn’t have a regular lecture in the first place, such as a chemistry lab. Kay C Dee, PhD, associate dean for learning and technology, says it’s not uncommon to spend a fair amount of time going over lab instructions and safety procedures—time that could be better spent collecting and analyzing data.

Dee adds that “the fundamental idea of the flipped classroom is not technology-

“We’re all intellectually engaged, and that makes it a flipped classroom.”

Flipping by using high quality online resources can enhance learning. “Technology has advanced to the point where we can get students information outside of class in new and exciting ways,” Dee says. “Learning is about remembering a fact and fitting it into all sorts of things you know about how the world works. I think you get to a much deeper level of learning when you can engage with the material on multiple levels.” ■

*Steve Kaelble is an Indiana-based freelance writer.*





FEATURE SECTION:

## Creative Energy

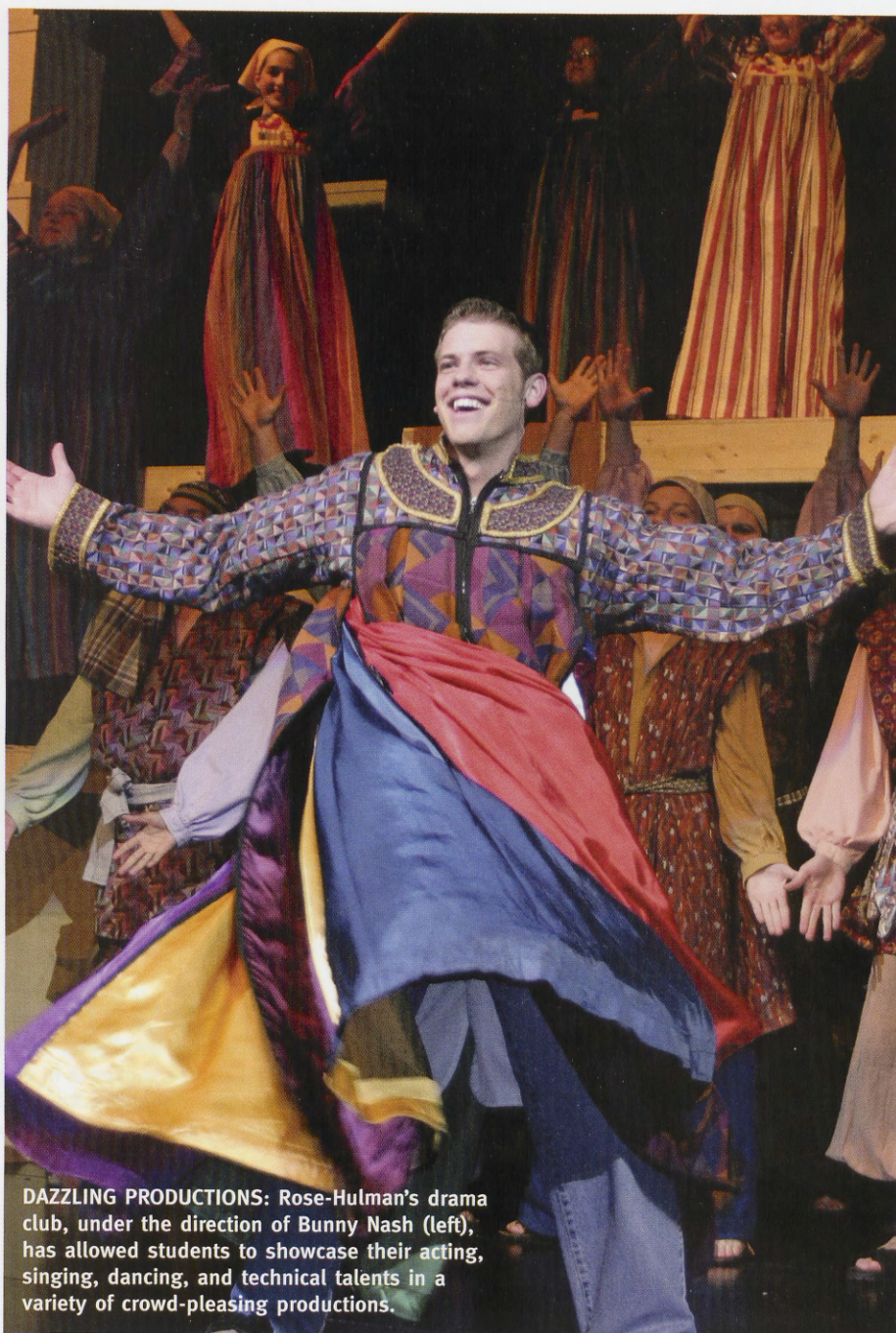
# Talent Shines on Hatfield Hall Stage

Arts Series, Drama Club Shows Dazzle in Cultural Center

By Marianne Messina

Since its grand opening 10 years ago, the Hatfield Hall Theater has become a hub for student creativity on campus, as well as being a source for inspiration and pride throughout the community. Performers and patrons commonly refer to the facility as the “Little Jewel of the Midwest.”

Students have showcased their acting, singing, and dancing talents in such elabo-



**DAZZLING PRODUCTIONS:** Rose-Hulman's drama club, under the direction of Bunny Nash (left), has allowed students to showcase their acting, singing, dancing, and technical talents in a variety of crowd-pleasing productions.



rate theatrical productions as *The Phantom of the Opera*, *Joseph and the Amazing Technicolor Dreamcoat*, and, this spring's musical, *Chicago*.

A performing arts series has brought a variety of entertaining shows to campus, including the Russian National Ballet, Tony Award-winning actor Hal Holbrook, and world-famous opera baritone Nathan Gunn.

Hatfield Hall Manager Bunny Nash,

who organizes these performances, is guided by the question, “What is a good artistic program to expose our students to?” Then, she seeks “artists who are at the top of their field, innovators in what they do.”

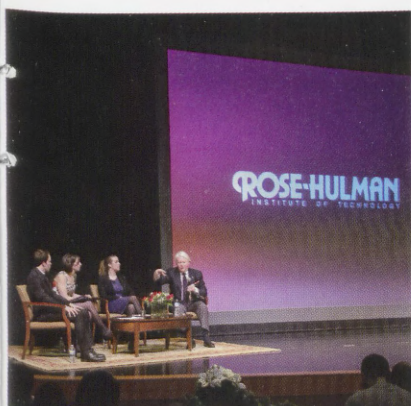
That was the case this fall with the Cirque Mechanics' dazzling Birdhouse Factory show, which had been on Nash's “wish list” for eight years. A stroke of “luck and timing” brought the acro-

batic group to campus for two nights of shows—with its large-scale mechanical systems, featuring platforms, wheels, a trampoline, and tightrope walking.

“We have started adding more popular programming and larger productions,” Nash says. “We're taking more risks.”

Drama club productions have become ambitious and high-tech, taking advantage of the engineering skills found on and off stage. *Joseph and the Amazing Technicolor*





**HATFIELD HALL IS A HAPPENING PLACE:** Celebrating its 10th year, Hatfield Hall hosts a variety of campus events each year. The list includes convocations, performing arts and drama club shows, and music concerts.

*Dreamcoat* featured towers with programmed banks of LEDs and large rear-projection technology. *The Wizard of Oz* was an engineering feat with pyrotechnics and elevators (for the melting witch). And, there was a 22-member technical crew behind the scenes to assist with *Frankenstein*.

Some technical aspects of productions have been part of senior-year robotics projects. A robotic boat, with wireless controls, was featured in a dramatic scene in *The Phantom of the Opera*, last spring's musical. There was also a student-designed pulley system for the infamous chandelier that crashed to the stage in the show's climax scene.

"A lot of technical directors wonder, how do you build a robotic boat? I never

worry about that here," says Greg Stump, Hatfield Hall's technical director. A civil engineering background helps him work with students to solve high-level design problems.

The question for Nash and Stump now is: How do you top this? The bar has been set high.

"Challenging the kids is the reward because they always come through," Stump says.

The same is true for the student performers, who aren't majoring in theater, music, or dance. The institute doesn't have a theater or music department, and students do not receive academic credit for their stage work. Nash feels fortunate to have high-quality students on campus.

"Our students have always been

"A lot of technical directors wonder, how do you build a robotic boat? I never worry about that here ... Challenging the kids is the reward because they always come through."

—Greg Stump, technical director, Hatfield Hall

extremely talented and overachievers," she says. "You never have to worry about students learning their lines—they learn their lines and everybody else's lines."

Rachel Agner, a junior computer science major, uses her artistic skills to paint the elaborate sets for each stage production. She visits Hatfield Hall throughout the day to see if anything needs to be painted and considers the building her "second home."

"Most of my friends have resulted from my association with the drama club and Hatfield Hall," Agner says. "I met my boyfriend there. It's like my little family."

She's not alone. Several marriages have blossomed from the Hatfield Hall stage, and the theatrical experiences have benefited alumni during their science, engineering, and business careers.

"On our Facebook page, we'll always have students say, 'I miss Hatfield Hall'" Stump says. "That's why we do it!" ■

*Marianne Messina is Rose-Hulman's web content director and attends nearly every Hatfield Hall show.*





**THE TIES THAT BIND:**  
Professor Jim Hanson  
proudly displays the  
neckties presented  
annually by civil  
engineering seniors  
to the 2012 Dean's  
Outstanding Teacher  
Award winner.



with a problem that they have never seen before. When completing a design project, they need to step back and reflect on what they have done. Is it the best solution? Could they have done better? Will the design stand the test of time?"

There are those questions again.

Hanson's inquisitive nature has extended to other aspects of his professional career. In 2004, he started

**"My job is to get students to think creatively. It's those out-of-the-box concepts that excite me and bring me to the classroom with a sense of wonder."**

—James Hanson, PhD  
Civil Engineering Professor

a project to interview 35 of America's leading practicing structural engineers. What they have in common: Each professional could identify problems throughout the design stage and understood the significance of finding a reasonable solution.

"While these outstanding engineers at the top of their fields are creative and innovative, there are basic principles that are part of every design they complete," the professor says. He is using that valuable insight, along with his classroom teachings and professional career lessons, to write a structural analysis textbook.

Students appreciate the talents and challenges that Hanson brings to the classroom. In 2006, civil engineering seniors surprised him with a necktie signed by each of them as a holiday gift. The cherished token has become an annual tradition, and Hanson proudly wears each year's "Senior Class Tie" to professional meetings.

"The tie is a constant reminder of why I'm a teacher. I exist for my students," he says. "I strive to take them as far as they need to go with a limit that exceeds even my imagination." ■

*Dale Long is Rose-Hulman's director of media relations.*

## Teaching Students to Ask Creative Questions

Story by Dale Long/Photo by Chris Minnick

Award-winning civil engineering educator Jim Hanson, PhD, believes teaching is more about giving students the ability to ask the right questions rather than just providing future engineers with skills to address tomorrow's challenging problems.

That's why Rose-Hulman students know Hanson isn't always going to answer a question posed in class or project review session. Rather, Hanson is most likely to reply with a question such as, "Is that reasonable?" "Why did you come up with that conclusion?" or "Convince me that's the best solution."

"Our students need to know how to do things better," Hanson says. "They have all the knowledge and skills to address a multitude of questions. I challenge them

to come up with the very best solution to solve those questions."

Students' problem-solving and design skills have been honed in a new building systems course Hanson developed. The mission of the first project assignment was designing a structure that could stand with only three base columns. Hanson took great pride in the students' multitude of creative solutions, each taking a different design approach.

"My job is to get students to think creatively. It's those out-of-the-box concepts that excite me and bring me to the classroom with a sense of wonder," says Hanson, the department's senior structural engineering faculty member. "They need to understand how to deal





# Tipping the Scale

## Jeff Ready is Taking on IBM, Dell with Unique Data Center-in-a-Box Concept

By Steve Kaelble

Even as a Rose-Hulman freshman, Jeff Ready had an entrepreneurial spirit. "My intent from the beginning was to start a company," he says.

The type of company he would create was less clear. Whatever the product, it was bound to have something to do with Ready's major in computer science. And, sure enough, he was in business before being handed his diploma in 1996, having connected with equally smart and enterprising students, including his longtime business partner, Scott Loughmiller, another 1996 computer science alumnus.

This collaboration has found success building innovative companies from California to Indiana that tap into the right market at the right time. The latest startup, Indianapolis-based Scale Computing, may be the most audacious venture yet.

Scale Computing has twice been listed by *Forbes* among America's Most Promising Companies.

"We sell data center infrastructure for small and midsize companies," explains Ready, the company's CEO. IBM, Hewlett-Packard, and Dell are already players in this business, but Scale Computing's new

HC3 product offers a whole new way to set up a data center.

What makes HC3 unique and creative is its data center-in-a-box concept. Ready draws similarities to someone purchasing a car. You *could* go out and buy the engine, seats, transmission, and door panels from separate companies. Then, you could assemble your own car.

"That's what IT professionals do today," Ready says. Companies piece together a complex data center with servers, storage systems, networking, and other components from a variety of manufacturers. With HC3 they have a system that eliminates ongoing licensing fees for the hypervisor, leverages open-source technologies, and simplifies support with a single vendor. It helps firms grappling with virtualization, particularly the licensing terms imposed by some vendors.

"It's easier, cheaper [by as much as 75 percent], more reliable, and it's what you need," says Ready. "From a business perspective, it's a pretty radical change in the way things are done ... the response has been fabulous, and we've gotten rave reviews."

Small- and medium-sized business-storage markets have become hotbeds of innovation for the industry. Scale Computing is gaining a reputation for bringing technological innovation to the IT world, twice being listed by *Forbes* among America's most promising companies. Now with HC3, the company has raised

\$12 million in a Series D round of investor funding and scaled up to about 1,200 customers and 60 employees, with 15 to 20 additional hires likely this year.

Ready has certainly created a lot of things in a relatively short time. What about products, such as video games, he imagined creating back when he was a student?

"That has yet to happen," he admits. "Maybe one of these days ..."

Steve Kaelble is an Indiana-based freelance writer.







**INNOVATIVE PROJECT:** Rose-Hulman Ventures Project Manager Rob Davignon (right) goes over aspects of the Freedom One Mobility wheelchair project with student interns Jamison Woodley, Benjamin Low, Brandon Ridner, and Arvind Chellappa.

# Wheeling a Great Idea to Market

Rose-Hulman Ventures' Interns, Staff Refine Indoor/Outdoor Chair for Indiana Client

By Steve Kaelble

Travis Underwood has always been a reasonably mechanical guy. So when a friend disabled by illness needed a better electric wheelchair, Underwood went to work.

"The product he had was inadequate for his environment," Underwood says. It would work well on some surfaces, but not on others, particularly uneven, outdoor landscapes. "I bought parts and pieces and built another machine—a raw prototype—in my garage."

The new mobility chair was an improvement. "I never really thought about bringing it to market until I saw the benefits," he says. "It didn't take long to realize this could help other people, too."

That's when Underwood, who decided to go into business under the name Freedom One Mobility, called upon Rose-Hulman Ventures for assistance. Getting a great idea up and running is a major accomplishment, but moving it from the garage to the marketplace brings new challenges.

"He had a working prototype and needed it to be refined and advanced. We took his unit, examined and analyzed it and looked at areas of improvement," recalls Rob Davignon, a project manager at Rose-Hulman Ventures. Work began last February, and it made the most sense to start fresh, building upon Underwood's design concepts.

What distinguished this electric mobility chair from others was its tank-like design, driven by two tracks instead of standard wheels. On some outdoor surfaces, the tracks were not working in tandem as well as they could.

"The tracks would fight each other," Davignon says. "We kept the tracks but improved their mechanics and then incorporated a new frame design to bring it all together."

The refined product rides primarily on the two track drives and one centered rear wheel. "What differentiates this from others is that it can be used indoors, at home, in the office, and in shopping malls, and then be taken outdoors on





trails, in the city, on sidewalks, and up small curbs," Davignon explains.

The device would be unique in the marketplace. There are chairs that work fine on most indoor surfaces and bulky devices that do well outside. "This is an all-purpose chair," Davignon says.

Underwood has been impressed by how Rose-Hulman Ventures enhanced his original concept. "That place really knocked my socks off. It's an amazing group of people," he says.

For one thing, Underwood was pleased that the assistance was simultaneously a learning experience for students. "It gives students experience seeing how things are done in the real world," he notes.

Davignon agrees, stating, "This is real-world stuff that you're going to find in industry. Students are given goals and requirements for product characteristics that they have to look at, and they have to design for those goals and requirements. Each student had a different role."

Ben Low, a senior mechanical engineering student, was an intern who had a hand in the Freedom One Mobility project. "I got to do some design, and I got to build a lot," he says. "They even taught me how to weld."

There's simply no educational substitute for this kind of hands-on experience, Low says. "It helps us tap into the design aspect and think of interesting ways to solve problems."

Other students assisting in the project were graduate students Arvind Chellappa and Jamison Woodley and junior mechanical engineering major Brandon Ridner. Students from nearby Ivy Tech Community College's Wabash Valley campus lent assistance with welding and frame construction.

The new mobility chair has already attracted plenty of attention around Indiana. Even before he engaged Rose-Hulman Ventures to bring it to the next level, Underwood's effort was a finalist for the 2012 TechPoint Mira Awards in the Health and Life Science Gazelle category and a nomination for Innovation of the Year from the same Indiana technology industry group.



"What differentiates this from others is that it can be used indoors, at home, in the office, and in shopping malls, and then be taken outdoors on trails, in the city, on sidewalks, and up small curbs."

—Rob Davignon, project manager, Rose-Hulman Ventures

With the prototype polished and refined, Underwood recently had the opportunity to show it off to military veterans who could benefit from the product at Walter Reed Army Medical Center. "It was accepted well, and, based upon that, I'm pushing forward. We're going to take this to market," Underwood says.

Funding is in place to launch production, and with further assistance

from Rose-Hulman Ventures, he hopes to have products ready to sell later this year. In the meantime, Underwood's sold on the value of a Rose-Hulman Ventures partnership. "It's mind-boggling how thorough they are." ■

*Steve Kaelble is an Indiana-based freelance writer.*



## Hardymon Urges Students to Think 'Big' During Campus Visit, Talk

Successful high-tech business investor and Harvard Business School professor Felda Hardymon, PhD, encouraged students to pave the way for America's technological and business horizons through entrepreneurship, innovation, and "the execution of neat ideas."



**WORDS OF WISDOM:** Alumnus Felda Hardymon (ME, 1969) met with students, faculty, and administrators during a recent campus visit.

The 1969 mathematics alumnus spent a day on campus early this winter and will return in late May to present the commencement speech for the 2013 graduating class.

Hardymon, a partner in Bessemer Venture Partners, focuses on investments in the software, communications, and

storage sectors. Past investments include office-supply company Staples, sporting-goods chain Sports Authority, and African telecommunications provider Celtel (now called Zain).

Since 1998, Hardymon also has taught and done research at Harvard Business School and has been a visiting professor of finance at the London School of Economics. He has also been director of systems and research at Duke University, where he earned master's and doctoral degrees.

Back on the Rose-Hulman campus, Hardymon told students that this is the best time to start a company, especially in the information technology architecture sector. Reasons given were: There's an abundance of available workers; there are lower startup costs; an ever-shrinking world allows for quick data transfer, and markets are thriving for good ideas.

"Investors back people who are not wanting to make money. We back people who want to do something," Hardymon says. "The idea is always cheap. The execution is really hard. Investors fuel execution, not ideas." ■

## CHINA OPENS MORE GLOBAL EXPERIENCES

Students and faculty have their passports ready to explore global educational experiences with a growing number of institutions.

Rose-Hulman signed agreements this fall with China's leading Hubei University of Automotive Technology and Beihang University. Advanced Transportation System Faculty Advisers Zac Chambers and Marc Herniter will teach a model-based systems design class this summer at Shanghai University.

Elsewhere in China, Emeritus Trustee Michael D. Thomas is visiting the country this spring to assist Rose-Hulman in establishing future relationships, including a possible research consortia with universities and students.

"Rose-Hulman is getting global attention in China," says Luchen Li, PhD, associate dean for global programs. "We're bringing the world to Rose-Hulman and Rose-Hulman to the world."

International campus enrollment is at an all-time high, with degree-seeking and exchange students from more than 20 countries. More Rose-Hulman students studied abroad in more countries in 2012. Also, new courses in international team management and global leadership are being offered to students.

"Rose-Hulman is making every effort to integrate global learning and international experiences into the curriculum and student learning," Li says. ■

## TAKE NOTE



Sophomores Alex Memering (left), AJ Piergiovanni, and Erik Sanders (right) will display their computer skills at this summer's International Collegiate Programming Contest in St. Petersburg, Russia. The team qualified after placing fourth in the Midwest regional.

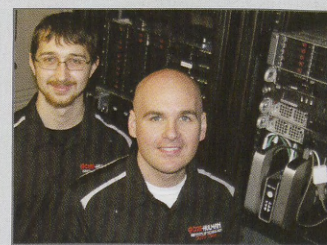
It has been another record-breaking year for new student recruitment, with the 5,000th application for 2013-14 admission expected early this spring. This tops last year's 4,469 total. Significant increases have come from women (up 18%), international students (up 74%), and electrical and computer engineering majors (up 32%).



Senior civil engineering students Chaela Jean (left) and Jessica Lundin placed fourth in an international



bridge-building contest with a three-legged space-compressed cardboard truss that held 9.1 kg. The contest attracted competitors from Japan, Colombia, Turkey, and the United States.



Junior Ryne Bell (left) placed first and senior Sean Richardson was second among Midwest students in the National Cyber League's fall competition. They are members of the campus's collegiate cyberdefense team that recently joined the national CyberWatch consortium.





**YOUNG ENTREPRENEURS:** The Governor Bob Orr Entrepreneurial Fellowship program has helped young alumni (from left) Yaw Aning, Elizabeth (Strohm) Kozman, and Ejimofor (Ej) Oruche start their career aspirations with Indiana companies.

## Fellowships Open Doors for Future Entrepreneurs

Story by Terri Hughes-Lazzell/Photo by Chris Minnick

Educating students to be innovative and have an entrepreneurial spirit are elements young Rose-Hulman alumni use to reach for success in today's fast-paced world.

"Engineering and technology are parts of all new, exciting ventures," says William Kline, dean of innovation and engagement. "It's vital for America's future that entrepreneurs are encouraged to start new ventures."

For seven graduates, that push has come working alongside Indiana's

most dynamic, high-growth companies through the Governor Bob Orr Indiana Entrepreneurial Fellowships. This unique program offers two-year, paid executive-level mentorship opportunities and enables the state's top college graduates to build an impressive professional network.

Elizabeth (Strohm) Kozman (ME, 2002), part of the first Orr Fellowship group in 2002, earned valuable experiences at Indianapolis' Gazelle TechVentures, a venture capital company.

"I got to see the entire entrepreneurial process from the beginning—negotiations, making investments, and overseeing a company receiving the investment," she says. "It was very different from what my classmates were doing after graduation."

Kozman stayed with Gazelle until 2006 when she returned to school to earn her MBA from Harvard Business School. She has returned to Indiana as associate director of strategic and commercial development at BioStorage Technologies Inc.

"The critical-thinking skills gained in my engineering degree have been beneficial throughout my business education and career," Kozman says.

Ejimofor (Ej) Oruche (BE, 2011) is wrapping up his fellowship at Apparatus, an information technology consulting and managed service company in Indianapolis. He is part of an operational team, consulting with companies, and helps build portals for clients. He also works on establishing efficiency metrics.

"Working in a fast-paced company forces you to make smart decisions faster and know when to drop something if it's not working," Oruche says. "I came into the fellowship with no experience in business. My learning skills gained at Rose-Hulman made it a lot easier to pick things up."

Another Orr Fellowship success story is Yaw Aning (CE, 2007), who used learning experiences at City Securities Corporation, a full-service investment bank, to found his own enterprise, Pocket Tales, a web-based social reading game that helps inspire a lifelong love for reading. At City Securities, Aning prepared financial projections, valuation models, and other financial models to give companies a clearer view of their businesses.

"The fellowship was invaluable in helping develop my business acumen," says Aning, adding that the experience was similar to a mini-MBA program. "I always wanted to be an entrepreneur and start my own company. The fellowship gave me a deep understanding of business and what it takes to actually operate a company. It put me in a position to start and build my own company at a faster pace than I had anticipated." ■





VALUES ROSE-HULMAN EDUCATION: Jeff Gilbert (ME, 1985), president and CEO of Software Engineering Professionals, came back to earn a master's degree in engineering management in 2006.

# Taking the Next Step

## Graduate School Celebrates 120 Years of Enriching Students' Technical Skills

Story By Terri Hughes-Lazzell

Although it is recognized for its undergraduate programs, Rose-Hulman also has a proud educational heritage of offering quality graduate-level programs that attract students from around the world.

In fact, 19-year-old Tsuji Taro traveled from Toyko to study here and earn the first master's degree awarded by Rose Polytechnic Institute in 1892. Two years earlier, he had received a bachelor's degree in civil engineering from the institute.

More than 120 years later, the number of master's degree graduates has topped 500 students—and counting.

“Our graduate program is as good as our undergraduate education. We use the same faculty, the same facilities for teaching, and hold students to the same

academic standards,” explains Azad Siahmakoun, PhD, associate dean of faculty/professor of physics and optical engineering.

“Graduate studies enhance the undergraduate experience at Rose-Hulman,” he says, adding he believes “we can't be best-in-class among higher education institu-

tions without having a quality graduate school.”

Rose-Hulman offers master's degree programs in nine areas. Engineering management and software engineering programs are designed for career professionals seeking to deepen their technical background while acquiring solid, forward-looking management credentials. The engineering management degree provides the management foundations of an MBA, but with added technical focus. There are a significant number of evening classes in both degree programs off campus to help professionals continue to work full time while earning their graduate degree.

“We provide technology business leaders a convenient fast track to the integration

“Graduate studies enhance the undergraduate experience at Rose-Hulman.”

—Azad Siahmakoun, PhD  
Associate Dean of Faculty



of management skills and critical technical knowledge,” says Craig Downing, PhD, head of the Department of Engineering Management.

Jeff Gilbert, president and CEO of Carmel, Indiana-based Software Engineering Professionals, returned to Rose-Hulman during evenings to earn a master’s degree in engineering management (2006). It supplemented his bachelor’s degree in mechanical engineering (1985).

“I would call my Rose-Hulman education foundational to my career,” he says. “The mindset, mental toughness, and confidence Rose-Hulman gave me are the building blocks of success in whatever I do.”

The graduate program also allowed Erin Reeves (MSOE, 2011) to begin a career as an electrical engineer at the National Nuclear Security Administration’s Kansas City plant, operated by Honeywell Federal Manufacturing & Technologies. She was drawn to the optical engineering gradu-

## Master’s degree programs offered:

- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Engineering Management
- Environmental Engineering
- Mechanical Engineering
- Optical Engineering
- Software Engineering

ate program after earning a bachelor’s degree in electrical engineering, with minors in mathematics and physics, at another college.

As a graduate student, Reeves participated in research, presented scholarly work at conferences, and contributed to published journals. These experiences opened opportunities to operate optical design programs and gain hands-on laboratory experiences.

“My graduate-level experience with optics allowed me to find a job quickly,” says Reeves, explaining that her Rose-Hulman education also helped her earn a promotion after about a year on the job. “The knowledge obtained through the variety of optics-relevant courses at Rose-Hulman has also helped me when talking to clients and vendors. I understand the concepts and goals of what my collaborators are trying to achieve.”

Also benefiting from the graduate experience was Brian Cahill (ME, 1996/

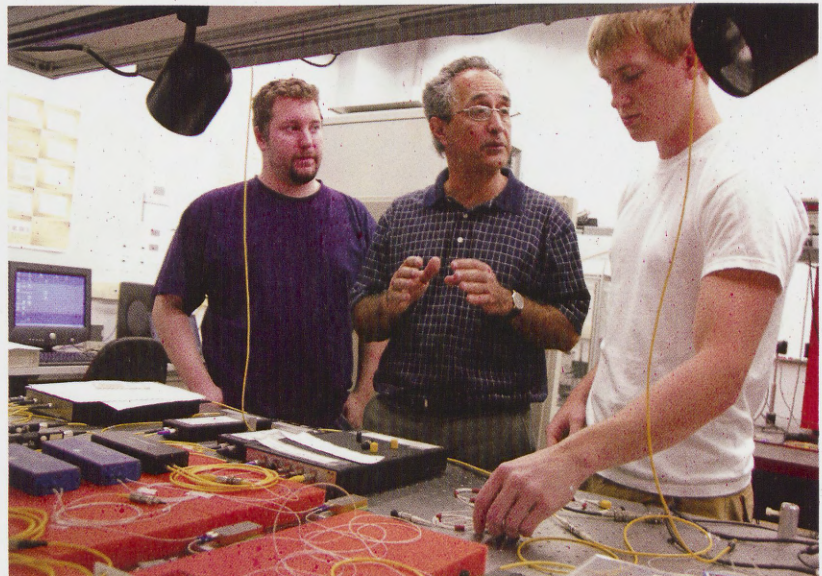
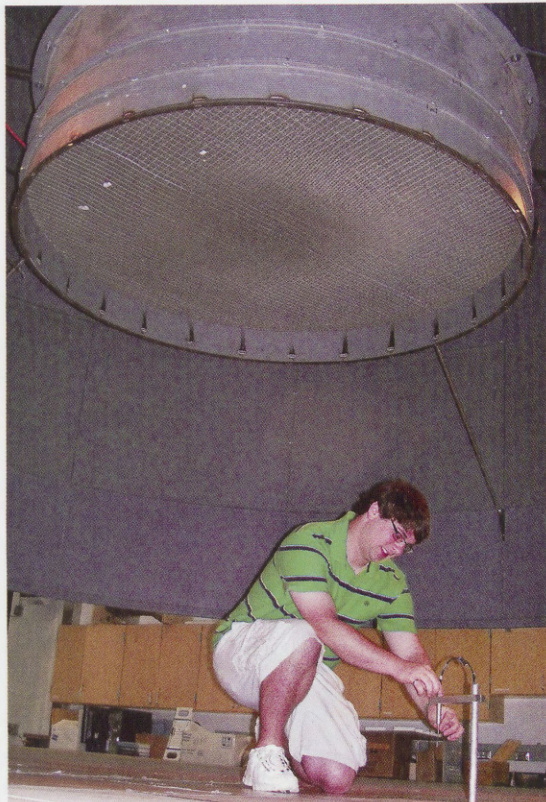
MSBE, 1999). He started as an industry design engineer with a medical products company before working as a senior product manager and senior design engineer for Guidant Corporation’s vascular intervention division.

Now, as president of Diesel Radiator Company in Melrose Park, Illinois, Cahill oversees the engineering, sales, and manufacturing groups. His primary focus is new product development and design, as well as new manufacturing processes and systems implementation.

“Graduate school allowed me to focus and identify what I really wanted to do. It also honed my skills,” says Cahill.

A new graduate-degree program attracting worldwide attention is a dual-degree program in which students can earn master’s degrees in optical engineering from Rose-Hulman and South Korea’s Seoul National University of Science and Technology. The program also offers an internship at a company in South Korea. ■

*Terri Hughes-Lazzell is Rose-Hulman’s marketing manager.*



**HANDS-ON EXPERIENCES:** Like Rose-Hulman’s undergraduate programs, master’s degree programs provide hands-on educational opportunities in several academic areas. Azad Siahmakoun (middle in top photo), associate dean of faculty and professor of physics and optical engineering, works with graduate student Christopher Dapkus and undergraduate student Ryan McGiffen on a research project. Meanwhile, mechanical engineering graduate student Mark Fleming (left) prepares a test in a tornado simulator at Ames, Iowa. He worked with Professor Fred Haan, PhD, on this research project.



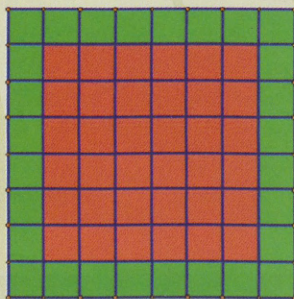
# Bailey Challenge

By Professor Emeritus Herb Bailey, PhD

AN IMPORTANT PART of the institute's strategic plan for 2013-2018 is that students become more globally oriented. We're encouraging this global focus for alumni through the challenging problems (Number 2 and Number 3) in this issue. Problem Number 1 is a warmup and is confined to a plane for those who do not yet think globally.

## WINTER PROBLEM NUMBER 1

Sally's original plan for the bottom of her swimming pool is shown with red tiles in the middle and green tiles around the edge. When the tiles arrive, she changes her mind and now wants a rectangular pool with green tiles in the middle surrounded by a single row of red tiles. How can she do this using all the tiles? Extra credit will be given for a solution that uses equations.



## WINTER PROBLEM NUMBER 2

Bill walks 10 miles south, then 10 miles east, and finally 10 miles north. If he ends up at his starting point, then where did he start?

## WINTER PROBLEM NUMBER 3

Assume that the earth is a sphere with a radius of 4,000 miles. Find another starting point so that Bill again returns to the starting point after the three segments. Extra credit will be given for additional starting points with *different latitudes*. It is not required that you find the latitude, just describe the starting points.

**SOLUTION TO FALL CHALLENGE:** My solution is a combination of many of your good ideas. A version of the Fall Super Bonus Problem is shown; only the digit eight is known. You were to find the other 33 digits. There must be zeros on either side of the given eight since two digits are brought down in both cases. The product of eight and  $abc$  is a three-digit integer and thus  $abc < 125$ . The product of  $e$  and  $abc$  is four digits, so  $e = 9$ . Subtracting  $ghi$  from the first four digits of the dividend results in only two digits and thus  $ghi > 900$ . So  $d > 900/125 = 7.2$ , and  $d$  must be eight, since  $ghi$  is only three digits.

Therefore, the quotient is 80809, and thus the product of  $abc$  and 80809 must be greater than 10,000,000 since the dividend has eight digits. It follows that  $abc > 10,000,000/80809 \approx 123.75$ , so  $abc = 124$  and the dividend is  $(124)(89809) = 10,020,316$ .

$$\begin{array}{r}
 \text{d 0 8 0 e} \\
 \text{a b c } \overline{) \text{ x x x x x x x x}} \\
 \underline{\text{g h i}} \\
 \text{x x x x} \\
 \underline{\text{x x x}} \\
 \text{x x x x} \\
 \underline{\text{x x x x}}
 \end{array}$$

Send your solutions to [Herb.Bailey@rose-hulman.edu](mailto:Herb.Bailey@rose-hulman.edu) or to Herb Bailey, Department of Mathematics, Rose-Hulman Institute of Technology, 5500 Wabash Ave., Terre Haute, IN 47803. Alumni should include their class year.

Congratulations to the following solvers of the fall problems:

**ALUMNI:** D. Camp, 1955; B. Hall, 1955; H. Brown, 1957; D. Bailey, 1959; L. Hartley, 1961; J. Tindall, 1961; C. McCoy, 1962; J. Snyder, 1962; C. Divine, 1967; R. Dutton, 1969; D. Willman, 1972; R. Collins, 1973; M. Marinko, 1973; D. Wheaton, 1974; J. Turner, 1975; M. Bailey, 1976; D. Zona, 1977; J. Skinner, 1980; R. Roll, 1981; M. Taylor, 1982; G. Schafer, 1985; B. Wright, 1986; M. Lancaster, 1987; M. Nigrovic, 1987; B. Seidl, 1987; E. Cegielski, 1990; B. Burger, 1991; P. Kimmerle, 1991; E. Wandel, 1992; E. Geib, 1993; C. Rettig, 1994; M. Pilcher, 1998; J. Schroeder, 1999; A. Engle, 2001; C. Hayden, 2001; D. Dominik, 2006; K. Hassler, 2006; J. Przybylinski, 2006; R. Gulden, 2006; J. Whitten, 2008; and D. Straub, 2010

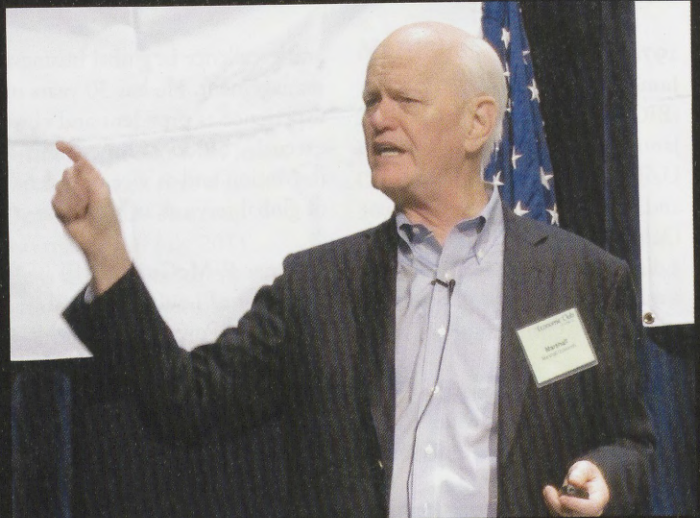
**FRIENDS:** A. Andrews, S. Compton, D. Crisler, T. Cutaia, T. Geib, L. Gaintner, J. Hasselbring, C. Hirschfield, D. Kelly, J. Ley, W. Morris, F. Otero, L. Puetz, E. Sellers, N. Weber, and E. Wern



## ALUMNI PHOTO ALBUM



**UP, UP AND AWAY:** Jason Caron (ME, 2002) was invited to fly with the U.S. Navy's elite performing flight group, the Blue Angels. He is a federal civilian engineer for the Navy's Naval Surface Warfare Center in Maryland.



**PASSING ALONG ADVICE:** Executive coach/best-selling author Marshall Goldsmith (MAECON, 1970) spoke to business leaders at the Economic Club of Indiana luncheon in January.



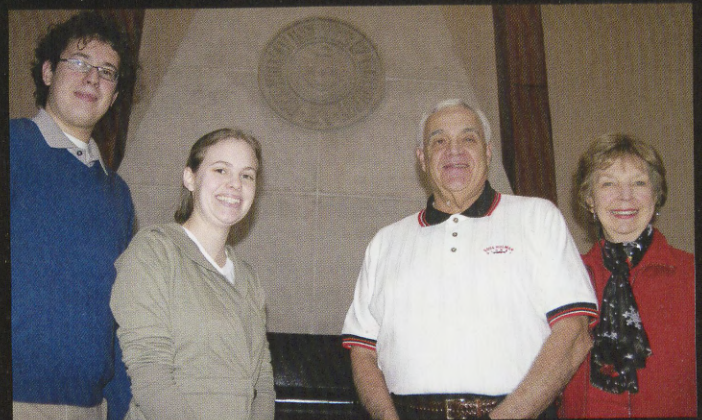
**ALUMNI LEGACY:** Vectren's energy delivery team includes four decades of alumni—from left, Sarah (Goodridge) Vyvoda (CHE, 2004), Jim Goodridge (ME, 1991), Mike Foster (CE, 1983), and Joel Beasley (CE, 1972).



**BALLET GUESTS:** Jason Moore (CS, 1997) brought his wife, Susan, from Baltimore to attend a performance by the Russian National Ballet on campus in January.



**PRESIDENTIAL MEETING:** Young Alumni Council leaders Adam Jarboe, left, (ME, 2005/MSEM, 2007) and Michael Reeves (CE, 2006) exchanged ideas with President Robert Coons during a campus meeting this winter.



**SUPPORTING STUDENTS:** Elmer Guerri (CM, 1965) and wife, Deanna, have set up a scholarship to support anthropology academic minors Kevin Dwyer and Erin Albaugh.



## CLASS NOTES

**1974**

**James K. Gilman, MD** (BIO/HDE, 2011) retired on January 10 as commander of the U.S. Army Medical Research and Materiel Command at Fort Detrick, Maryland. He has had a distinguished 35-year career as a military leader and clinician.

**1977**

**David S. Jones** (CE) was recognized by Worldwide Who's Who for dedication, leadership,

and excellence in global business management. He has 30 years of experience as president and chief executive officer of Innovation in Motion and as vice president of global services at Motorola.

**Thomas F. McGuire** (ME) is co-owner of Louisville-based Air Hydro Power (AHP), which distributes Rethink Robotics' new Baxter robot, one of *TIME Magazine's* 2012 Top 20 Best Inventions. AHP received the

2012 Kentucky Business Pace Setters Award and has been named one of the Best Places to Work in Kentucky for the past four years.

**1978**

**Don Rosenbarger** (CE) is vice president for the Colas Group's The Delta Companies in Cape Girardeau, Missouri.

**David A. Whiteley** (EE) was elected to Unitil Corporation's Board of Directors. He has been the owner of a private consulting firm, Whiteley BPS Planning Ventures, and the executive director of the Eastern Interconnection Planning Collaborative. Unitil Corp. provides natural gas and electricity to more than 173,000 New England customers.

**1981**

**Richard R. Roll** (CE) received the 2012 Environmental Engineer Award from the New York Water Environment Association (NYWEA) for making a significant impact in environmental engineering and outstanding contributions in this career field. He is director of technical and regulatory services for the Niagara Falls Water Board.

**1984**

**Robert W. Techentin** (CS) was co-author of the paper, "A Zero Sum Signaling Method for High Speed, Dense Parallel Bus Communications," that was a 2012 DesignCon Paper Award winner in the high-speed design category. He is a principal engineer at the Mayo Clinic's Special Purpose Processor Development Group.

**1993**

**Daniel J. Corey** (CE) is project coordinator for the Warren County (Ohio) Engineer's Office, overseeing several major

roadway improvement projects. He is also a township trustee.

**1996**

**Arik Quam** (CE) is project manager for Walsh Construction, which will be building a new bridge across the Ohio River from downtown Louisville to Indiana.

**2001**

**Chris Bauer** (CE) has been appointed project manager for Hunt Construction Group's Los Angeles Dodgers stadium renovation project. He also was named one of the *Tampa Bay Business Journal's* 2012 "Up and Comers" in the Tampa area.

**2002**

**Rebecca Richardson** (CE) is leading a new engineering division for AmFab Inc., a steel fabricator in Bernalillo, New Mexico.

**2003**

**Jason Meyer** (CE) is developing a watershed management ordinance for Cook County, Illinois, as engineer with the Metropolitan Water Reclamation District of Greater Chicago.

**2007**

**Robert Baldwin** (CE) is working for AG&E Associates in Addison, Texas, after earning a master's degree at the University of Texas-Arlington.

**Jacob Wagle** (CE) is Rose-Hulman's new director of facilities operations. He formerly was a project construction manager for Garmong Construction Inc.

**2008**

**Alexandra Joyce** (ME) led a project for the Discovery Channel's *Curiosity* show that investigated the mystery around the Hindenburg disaster. ■

## ALUMNUS, STUDENT HELP CREATE NEW SCOUTING BADGE

Alumnus David Radue (ME, 2006) and current electrical engineering student Thomas Foulkes have helped prepare Boy Scouts for the future by assisting in the development of a new game design merit badge. Scouts can begin earning the honor in March.

The new badge is part of the Boy Scouts of America's science, technology, engineering, and math initiative. It makes Scouts aware of the breadth of the gaming world, prompts them to think analytically about games they already play, teaches core concepts of game design, and allows them to create their own gaming experiences.

Radue, an engineer at MIT's Lincoln Laboratory, led the project team that worked with the Scouts' national office to establish badge requirements and supporting materials. Foulkes helped draft a section of the badge information pamphlet and organized scouts from his former Terre Haute troop to test game design exercises. ■



David Radue





## Rosebuds

**1993**

**Matt Warstler** (CE) and wife Mitzi added a second son, Nicholas Paul, to the family on September 25, 2012. Matt lives in Birmingham, Alabama, and is technical support manager for Southern Company Services' transmission design and maintenance support business unit.

**1999**

**Jeremy Schoen** (EE/MSEM, 2005) and wife, Alexandra Bowers, had a daughter, Annalena Evelyn, in November 2011. The couple married in 2009. He is an associate professor at Georgia Gwinnett College after earning a doctorate in organizational behavior at Georgia Institute of Technology.

**2000**

**Jason Macak** (ME) and wife, Amy (Hentz), had their first child, Madison Jayne, on November 28, 2012.

**Lester (Pete) Mobley**

(ME; MSME, 2002) and wife, Fran, had a daughter, Maryetta Adeline, on January 3, 2013. He became Rose-Hulman's plant engineer on January 2.

**Chris Phillips** (EE) and wife, Kacey, welcomed a daughter,

Liana Grace, on September 20, 2012. The family lives in Southern California.

**2001**

**Amy (Hentz) Macak** (EE) and husband, Jason, welcomed Madison Jayne to their family on November 28, 2012.

**2002**



**Leo X. Morand** (CE) and wife, Christen, welcomed twin girls, Lucy Grace and Claire Elise, on October 10, 2012. He is a project engineer with Gewalt Hamilton Associates in Vernon Hills, Illinois.

**2003**

**Alexandra Bowers** (CSSE) and husband, Jason Schoen, had a daughter, Annalena Evelyn, in November 2011. She is an information technology developer for The Home Depot.

**2004**

**Matthew Albert** (CE) and **Jessica (Farmer) Albert** (CHE) are the proud parents of a son, Nathaniel Nielsen, born on April 13, 2012.

learned about nuclear power generation in the U.S. Army and then managed General Electric's Knolls Atomic Power Laboratory (KAPL). He retired in 2001 after serving as program manager for decommissioning KAPL's naval reactor training facilities. Survivors include three sons and six grandchildren.

**2007**

**Bruce Boehl** and wife, Jeana, welcomed their first child in October 2012. The couple was married in July 2011. He is a maintenance engineer with Marathon Petroleum in Robinson, Illinois.

**2009**

**Andrew Pinkstaff** (CE) and **Katrina (Mader) Pinkstaff** (CE) welcomed a son, Austin Joseph, on October 11, 2012. He is lead bridge inspection engineer for the Indiana Department of Transportation's (INDOT) Vincennes district, and earned a master's degree in civil engineering from Virginia Tech in May 2012. She is an INDOT construction engineer on the I-69 extension project.

**Maria (Fouts) Straub**

(ME/MSEM, 2010) and Dean Straub had their first child, Philip Joseph, on October 24, 2012. The couple was married on September 24, 2011.

**2010**

**Dean Straub** (CHE/CHEM) and Maria (Fouts) Straub welcomed a son, Philip Joseph, on October 24, 2012. The couple resides in Katy, Texas. He is a process engineer at Jacobs Engineering in Houston. ■

**1956**

**Charles D. Tolson** (EE), 78, died on December 12, 2012, in Columbus, Indiana. He retired from Boeing Company after 34 years of service, and formerly led McDonnell Douglas' F-4 Phantom and F-18 Super Hornet design teams and was department head for Vincennes

## Marriages

**2005**

**David Honan** (CE) married Cortney Kinkead on September 30, 2012, in Snohomish, Washington. The couple lives in Snoqualmie, Washington. David is a rail/transit project engineer at HDR Engineering's Seattle office.

**2006**

**Ian Dailey** (CHEM), PhD, married Mary Caruso-Dailey, PhD, on October 20, 2012, in Indianapolis. Ian earned his doctorate from the University of Illinois in 2012. He and Mary are chemists at 3M in Minnesota. The couple resides in Maplewood, Minnesota.

**2007**

**Erin Craft** (CE) and Rick DeCola were married on April 21, 2012, in Raleigh, North Carolina. The bridal party included **Amy Knue** (BE, 2007) and **Katie Benner** (CE, 2008). Erin is a project engineer for The Walsh Group. The couple resides in Raleigh.

**2009**

**Matthew M. LaCross** (ME) married Jillian Swan on June 30, 2012, in Williamsburg, Michigan. He is an application engineer for Cone Drive Operations Inc. in Traverse City, Michigan. ■

University's emerging technology program.

**1972**

**Gary J. Schofe** (ChE), 62, died on December 23, 2012, in Akron, Ohio. He had been plant manager for ICI Paints in Georgia. Survivors include two daughters and one grandchild. ■

## Obituaries

**1946**

**Frank Jones** (ME), 91, died on December 29, 2012, in Sullivan, Indiana. He retired from Farm Fans in Indianapolis. Survivors include one daughter.

**1954**

**Donald A. McCune** (EE), 79, died on November 18, 2012, in Spokane, Washington. He



## ALUMNI NEWS

### Road Shows: Bringing Campus to a Community Near You This Year

The Office of Alumni Affairs continues to reach out to alumni throughout the country, building on relationships established on campus and keeping alumni, family members, and other special friends informed about exciting campus developments.

Special "Rose on the Road" gatherings are being planned this year in a city near you. These events will feature campus leadership, along with alumni and institutional advancement staff members. Efforts are being made to include informational, behind-the-scenes tours at innovative engineering or science attractions.

An event in early February allowed alumni in the Greenville/Spartanburg, South Carolina, area to visit Milliken & Company's Innovation Gallery. It was hosted by Steven D. Meyer (CHE, 1989) and Alicia (Gehlhausen) Harmon (CHE, 2006) and featured James A. Goecker, vice president for enrollment management.

Other recent events were conducted at the Engineers Club of Dayton, Ohio; BorgWarner's Powertrain Technical Center in Auburn Hills, Michigan; and in Grand Rapids, Michigan. Providing campus updates were Phillip J. Cornwell, vice president for academic affairs, and James A. Bertoli, executive director of alumni affairs. Alumni hosts were Morgan Bruck (ME, 1969), Robert E. Johnson (EE, 1952), Christopher Lanker (ME, 1992), David Price (EE, 1986), and Autumn (Weddle) Faith (CHE, 2003).

The alumni office is also reaching out to graduates and their families by hosting receptions before performing arts shows in Rose-Hulman's Hatfield Hall Theater and having a behind-the-scenes tour of UAP's new medical office building in Terre Haute, organized by Garmong Construction and Hannum, Wagle & Cline Engineering.

More happenings are planned for this year. Look for events as they are posted on the alumni website at [rosetem.rose-hulman.edu](http://rosetem.rose-hulman.edu). ■



## ALUMNI CALENDAR

Check latest events at  
[rosetem.rose-hulman.edu/events](http://rosetem.rose-hulman.edu/events)

### SPECIAL ALUMNI EVENTS

Rose-Hulman Honors/Awards Ceremony | **April 20**  
500 Festival Mini-Marathon | **May 4**  
Armed Forces Bump Day, Indianapolis Motor Speedway | **May 19**  
Class of 1963 50th Reunion Commencement Celebration | **May 24-25**  
Summer Scholarship Scramble, Prairie View Golf Club, Carmel, Indiana | **June 20**

### 'ROSE ON THE ROAD' EVENTS

St. Patrick's Day, Evansville, Indiana | **March 16**

### FIRST ROBOTICS' CROSSROADS REGIONAL

Sports and Recreation Center, Rose-Hulman

**April 4** | 8 a.m. to Noon

**April 5** | 9 a.m. to 4:30 p.m.

**April 6** | 9 a.m. to Closing

### NATIONAL MONTH OF SERVICE | APRIL

(Organized by Young Alumni Council)

Terre Haute, Indianapolis, Chicago, Cincinnati, and Kansas City

### SUPPORTING THE ARTS EVENTS

Hatfield Hall Receptions, Alumni Center

Jack Hanna Show | **March 9** | 2:30 p.m.

StepCrew Show | **March 22** | 7:30 p.m.

Nathan Gunn Show | **May 2** | 7 p.m.

save the date for  
**HOME COMING**  
**2013**  
**SEPTEMBER 20-21**

## ALUMNI NEWS BRIEFS

### Summer Scholarship Golf Scramble on June 20



Alumni can share a round of golf with classmates and old friends on one of Indiana's premiere courses while raising scholarship funds during the Summer Scholarship Scramble on Thursday, June 20, at Prairie View Golf Club in Carmel, Indiana.

Since 2007, more than \$150,000 has been awarded to students from the Wabash Valley and Central Indiana through this outing.

For more information on playing and/or sponsoring this event, call Annual Fund Coordinator Jennifer Kenzor at 812-877-8217.

### Science Night Lectures Part of *Star Wars* Exhibit

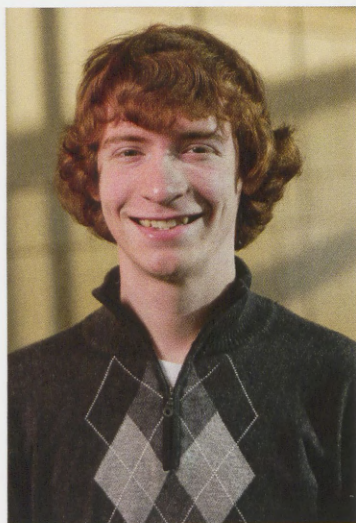
Rose-Hulman has joined with the Indiana State Museum to organize a Science Nights lecture series this summer that's part of the exciting exhibition, *Star Wars: Where Science Meets Imagination*, from May 25 to September 2. Four lectures by Rose-Hulman professors will showcase the science behind the science-fiction films.

The traveling exhibit will feature props and costumes from all six movies, including a full-sized replica of the cockpit of the Millennium Falcon from *Episode IV*. It will be the largest traveling exhibit in the history of Indiana State Museum, located at 650 W. Washington St. in the White River State Park area of Indianapolis. ■



# PHONATHON BENEFITS STUDENTS AND ALUMNI

*Sharing stories, getting career advice, and finding common interest areas with alumni are just a few of the benefits students gain while raising money for The Fund for Rose-Hulman through the annual phonathon.*



Gary Newell, a freshman mechanical engineering major, says his favorite part of working on the phonathon is speaking with alumni who are “always friendly and love to speak about their experiences.”

The phonathon is the primary activity for The Fund for Rose-Hulman, which raises funds to meet the institute’s annual general operating expenses and supports student scholarships. Donations may also be directed to

specific academic departments and athletic programs.

**Students’ efforts brought in more than \$460,000 during the fall—\$60,000 above the fundraising goal.**

“The students really make a difference with our fundraising efforts,” says Jennifer Kenzor, annual fund coordinator.



“ I love finding out how Rose-Hulman has affected people and the directions of their lives. I’ve spoken to former students, professors, parents, and administrators. Everyone has his or her own unique experiences and memories, but almost every time, we have something in common. ”

Carley Shumate  
Senior Biomedical Engineering Major  
Phonathon Caller Since Spring 2011



“ I’ve talked with alumni about professors, politics, Terre Haute, and everything else. I have spoken to some very brilliant and interesting people. The alumni have not only been generous with their investments, but also with advice and kind words. ”

Ronobir Mookherjee  
Freshman Computer Engineering Major  
First-Year Phonathon Caller

**MAKE YOUR DONATION TO ‘THE FUND FOR ROSE-HULMAN’  
THROUGH THE OFFICE OF INSTITUTIONAL ADVANCEMENT**

at 812-877-8455 or [www.rose-hulman.edu/give](http://www.rose-hulman.edu/give)



DevelopmentOffice@rose-hulman.edu

812-877-8217

Terre Haute, IN 47803

5500 Wabash Avenue

**ROSE-HULMAN**  
INSTITUTE OF TECHNOLOGY

Thank you for investing in the lives of students

and faculty who impact the world.

Your gift helps Rose-Hulman prepare its

**ROSE-HULMAN**  
INSTITUTE OF TECHNOLOGY

**Support**  
faculty excellence

**Bolster**  
campus  
technology

**Educate**  
accomplished  
students

**Develop student**  
experience initiatives

**Enhance academic programs**

**Hire**  
renowned  
faculty

**Increase**  
student  
scholarships



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL

PERMIT NO. 562

TERRE HAUTE IN

POSTAGE WILL BE PAID BY ADDRESSEE

ROSE-HULMAN INSTITUTE OF TECHNOLOGY  
OFFICE OF INSTITUTIONAL ADVANCEMENT  
5500 WABASH AVENUE  
TERRE HAUTE, IN 47803-9958





Your gift to The Fund for Rose-Hulman supports the Institute's mission to provide its students with the world's best undergraduate science, engineering, and mathematics education.

I/we want to advance Rose-Hulman's impact on the lives of its exceptional students and renowned faculty with a \$ \_\_\_\_\_ gift for one or more of these key initiatives:

- ☐ Rose-Hulman's Greatest Needs
- ☐ Other \_\_\_\_\_
- ☐ Student Scholarships

### Annual Giving Circles

*Recognizing annual gifts from July 1 to June 30*

Herman Moench Circle	\$25,000
Hulman Circle	\$10,000
Founders Circle	\$5,000
Trustees Circle	\$2,500
Presidents Circle	\$1,000
Deans Circle	\$500
Rose and White Circle	\$250
Century Circle	\$100

### President's G.O.L.D. Circle

*Recognizing Cumulative Young Alumni Giving*

Gold	\$5,000
Silver	\$2,500
Bronze	\$1,000

Name \_\_\_\_\_ Class Year \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Telephone \_\_\_\_\_ (H) \_\_\_\_\_ (C) \_\_\_\_\_  
Email \_\_\_\_\_

Please list my/our name(s) in the 2012-2013 Honor Roll of Donors as:

\_\_\_\_\_

- ☐ Rose-Hulman is included in my/our estate plans.
- ☐ Please send me information regarding making a planned gift to Rose-Hulman.

### Giving Options

☐ A check made payable to Rose-Hulman is enclosed.

☐ Credit Card: ☐ V ☐ MC ☐ D ☐ AE

\_\_\_\_\_

Expiration: \_\_\_\_\_ (Month) / \_\_\_\_\_ (Year)

☐ Give online at [www.rose-hulman.edu/give](http://www.rose-hulman.edu/give)

### Corporate Match Information

My employer, \_\_\_\_\_, will match my/our gift.

My spouse's employer, \_\_\_\_\_, will match my/ our gift.



5500 Wabash Avenue  
Terre Haute, IN 47803

Address Service Requested



## Stay connected

Stay connected with Rose-Hulman through the digital world by scanning the mobile barcode above. It will connect you with the latest information on our web site ([www.rose-hulman.edu](http://www.rose-hulman.edu)). You can also keep informed by becoming a fan of Rose-Hulman's Facebook page or following us on Twitter (@rosehulman or #rhitpride).



## PARTING SHOT

### Alumnus Provides Glimpse into Artistic World

Darrell Staggs (CHE, 1978) never thought of himself as an artist but always liked photography. As he learned more about the art behind composing photographs, he started capturing unique scenes from throughout America. Here, he examines the textures in the wind- and water-carved stone at Weathering Pit Ridge near Lake Powell, Utah. A late time of day was critical for getting the right blend of lighting and contrasts. See more images by Staggs on page 14.