Engineering Leadership & Innovation Institute at UCF

The mission of eli² is to help students discover their burning desire and confidence to **create**, **innovate**, **collaborate** and **deliver world-changing solutions**.

Fall 2014

The eli² Story

"UCF excels at producing fundamentally sound engineers, according to industry," says Tim Kotnour, industrial engineering professor and director of eli². "Our intention with eli² is to provide students opportunities throughout their entire academic experience to develop a skill set that distinguishes them when they graduate."

Rising above the competition can be daunting, considering the nation produces more than 80,000 new engineering graduates each year. And UCF is one of the largest producers.

Kotnour and his team have built an institute from the ground up with programming designed to touch UCF engineering and computer science students – all 8,000 of them – such as the Leaders Up Close Seminar Series, an undergraduate minor (or certificate) in Engineering Leadership, professional development opportunities, and dedicated Maker Spaces to unleash creativity that leads to marketable innovations.

While many engineering colleges offer professional development programs, the most distinguishable feature of UCF's engineering leadership institute is lifelong engagement. Through eli², professionals can get a master's degree in engineering management.

Ultimately, the goal is to inspire not just leadership in students but a real passion for engineering – a field that comes with such academic rigor that student retention is a priority.

"Convincing our students to stay in engineering and computer science is a huge win," says Kotnour.

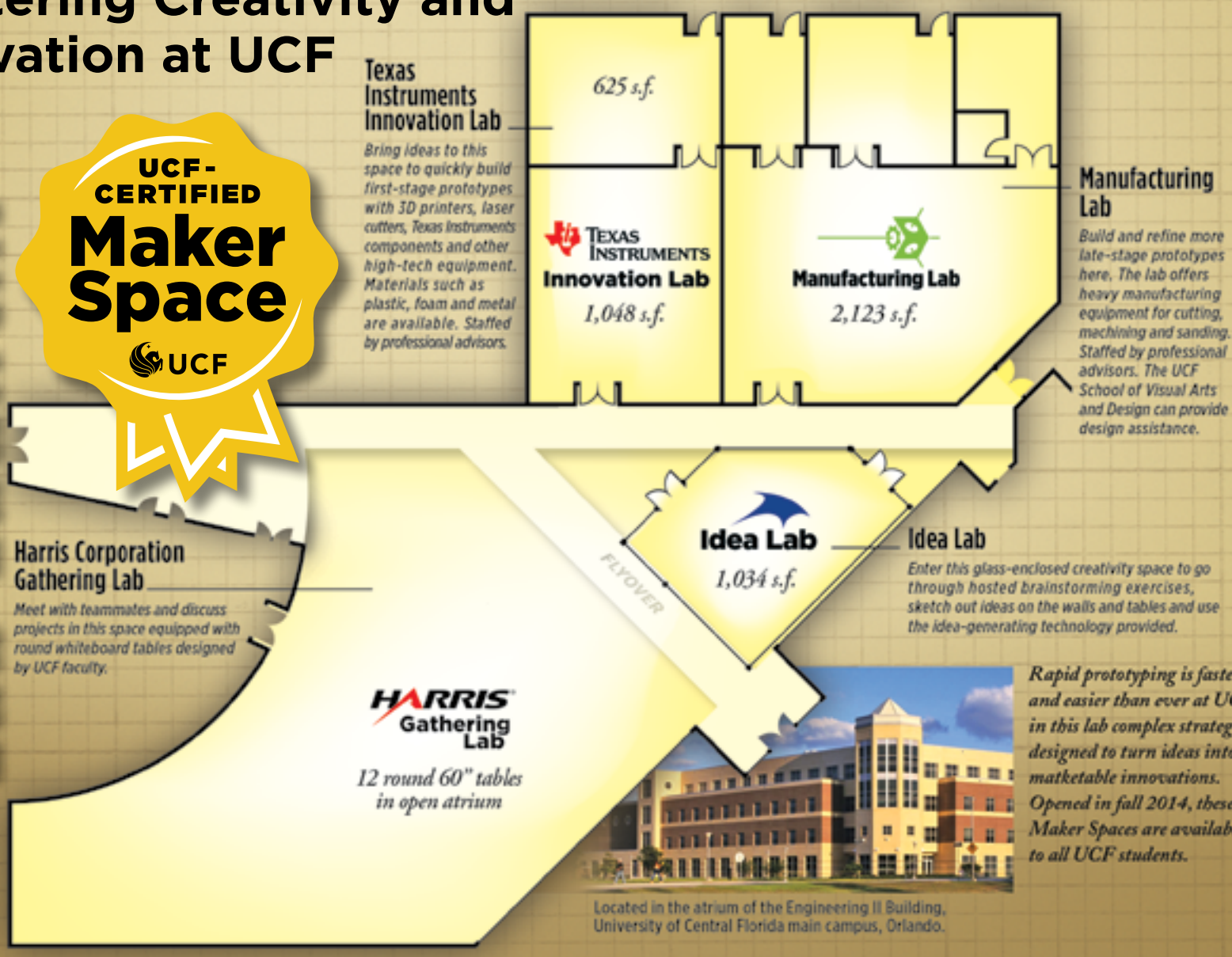
It's a win not only for UCF, but also Duke Energy, which supports eli² and sees it as a valuable pipeline for filling internships. "Duke Energy's top priorities are workforce development and education," says district manager Tricia Setzer, "and eli² fits both. Students are learning that there's more to know as a professional than what is learned in the classroom."

Why eli²? Because inside every engineer & computer scientist is a heart that desires to make the world better.

Bolstering Creativity and Innovation at UCF

Lab Launch!

UCF-CERTIFIED Maker Space



Rapid prototyping is faster and easier than ever at UCF in this lab complex strategically designed to turn ideas into matketable innovations. Opened in fall 2014, these Maker Spaces are available to all UCF students.

Located in the atrium of the Engineering II Building, University of Central Florida main campus, Orlando.

Thank You

A RICH HISTORY OF INNOVATION

TEXAS INSTRUMENTS

Who'd have thought that a toy would start a technology revolution?

Gene Frantz was onto something when he worked as the system designer for the TI Speak & Spell in the 1970s.

The UCF electrical engineering alumnus and retired TI principal fellow is often called the "father of digital signal processing" for his role in creating the technology inside the beloved early learning device, which featured the world's first linear predictive coding DSP integrated circuit.

That early platform technology helped to build the innovative smart device industry prevalent today.

The new UCF Maker Space lab complex offered by eli² is unique because it's specifically designed to encourage and replicate what occurs every day in industry, when collaboration between the hard and soft sciences occurs in cross-functional, multidisciplinary teams that strive to transform ideas into next-generation products.

"Innovation is our wheel house," said Steve Lyle, TI director, University and Engineering Workforce Development, "so this is something we want to be a part of."

GLOBAL INNOVATORS

HARRIS

Most people in the high-tech communications and information technology industries know the Harris Corporation. The international company, in business for 117 years, serves government and commercial markets in 125 countries.

But people may not know that UCF is the largest workforce supplier for Harris. The $5 billion company, headquartered in Melbourne, Fla., employs 14,000. The company's investment in the UCF Maker Space labs translates to more engineers and computer science graduates prepared for the demands of cross-disciplinary global teamwork, and fuels the continued need for creative innovation.

"Enabling UCF students to come together in the spirit of diverse collaboration to hone creative vision is paramount for the next generation of innovators who will make big leaps in Harris' technology evolution," said Robert Duffy, senior vice president.

The People Making it Happen

The Visionary

Tim Kotnour, Ph.D.
eli² Role: Director

"Passion is what's it's all about. Students need to remember that engineering is the greatest gig in the world."

About Tim Kotnour: Professor, Industrial Engineering and Management Systems. Joined UCF faculty in 1995. He holds a Ph.D. in industrial and systems engineering from Virginia Tech and consults with partners such as NASA, U.S. Department of Defense, EA Sports and more. He was awarded the NASA Public Service Medal in 2001 and 2005 for his work with the Kennedy Space Center. His passion is helping leaders made their strategy real.

The Creative Guru

Bob Hoekstra, Ph.D.
eli² Role: Creative Director

"Creativity is at the very core of engineering. I want students to explore 100 ideas before they arrive at one solution."

About Bob Hoekstra: Associate Professor, Industrial Engineering and Management Systems with a joint appointment in the School of Visual Arts and Design. Joined UCF faculty in 1993. Holds a bachelor's degree in English and theatre, a master's degree in design and a doctorate in industrial and mechanical engineering. He was formerly a NASCAR engine researcher and designer with Penske Racing. He holds six U.S. patents that span alternative fuel and furniture design and he is an Emmy Award winner. Transformed the Idea Lab from concept to completion. His passion is creativity and art.

The Start-Up Launcher

Oscar Rodriguez
eli² Role: Director, Small Business and Entrepreneurial Development

"What's cool is that we can now truly enable engineering student leaders to integrate the craft of engineering with the art of design and the practice of entrepreneurship to make their business ideas a reality."

About Oscar Rodriguez: Joined UCF in 2013 after serving as president and CEO of Extreme Networks. He has more than 28 years of experience in leadership roles that span high-technology product development, marketing, executive sales, and operations with large multi-nationals such as Motorola, DuPont, Nortel Networks, Alcatel and Lucent-Bell Labs. He's also held entrepreneurial leadership roles with several private companies. A proud UCF computer engineering alumnus, he also holds an MBA from University of North Carolina at Chapel Hill. His passion is helping entrepreneurs succeed.

The Innovator

Dale Jackson
eli² Role: Director, Texas Instruments Innovation Lab

"Creative and critical thinking is the difference between a good idea and a great solution."

About Dale Jackson: Joined UCF after 18 years at EA Sports creating new user experiences. Projects included Madden Football and other NFL and NCAA projects. Founded the EA Sports Innovation Lab. Holds a degree from Purdue University in Computer Graphics Technology. His passion is solving problems and helping others to do the same.

The Tinkerer

Don Harper
eli² Role: Director, Information Technology and Special Projects

"I love building things and helping students."

About Don Harper: Has served as IT director for the UCF College of Engineering and Computer Science since 1999. He's also involved in numerous projects outside IT, including leading a two-year project that transformed his personal vehicle into a driverless vehicle, which won a slot in the finals of the DARPA Urban Challenge. He was named Mentor of the Year for 2013 in a Florida robotics high school competition. His passion is mentoring students.

Others on the eli² Team

Charles Reilly, Academic Director
Robin Knight, Director of Development
Kimberly Lewis, Director of Marketing
Pete Alfieris, Events and Logistics Coordinator
Kate Hurt, Events Coordinator
Catherine Vergopia, Project Manager

Faculty representatives
Manoj Chopra, Ph.D.
Steven Duranceau, Ph.D.
Seetha Raghavan, Ph.D.
Samuel Richie, Ph.D.
Bill Thompson, Ph.D.

Left: Michael Lewis, Vice President, Duke Energy, says that authentic leaders understand their strengths and weaknesses, and seek to understand how others perceive them. Hosted by Tim Kotnour, Ph.D.

Look Who's Talking!
Leaders Up Close Seminar Series

"The idea is to fail early, fail often. Don't try to engineer the best possible solution and spend lots of money and lots of time doing it. Engineer prototypes. But there's a caveat: success is mandatory."

– Jason Dunn, '07 and '09. His company is sending the first 3D printer to space.

Each fall and spring, eli² offers the Leadership in Engineering course – also known as the "Leaders Up Close" Seminar Series – for undergraduates. More than 900 students have benefitted since the series' launch in 2011.

Past speakers include

Norm Augustine, Retired Chairman & CEO, Lockheed Martin
Brian Crutcher, '95, Executive VP, Texas Instruments
Jason Dunn, '07 and '09, Co-Founder, Made In Space, Inc.
Gene Frantz, '73, Texas Instruments (retired)
Joanne Puglisi, '73, Program Director, Lockheed Martin
Angel Ruiz, '78, Head of Region North America, Ericsson
Beverly Seay, UCF Board of Trustees
Randy Zwirn, President and CEO, Siemens Energy

Videos available online

Included are short, 10-minute studio interviews called "Leaders Up Close and Personal" which get to the heart of each guest's leadership style and work philosophy. See videos of past speakers at: http://bit.ly/1cCfX2m

SEMINAR SERIES BENEFITS

Candid, high quality experience
Students are encouraged to introduce themselves, ask questions and share ideas with the VIP guest speakers to spark a personal and enriching dialogue.

Resume impact
When the course appears on a transcript and resume, it reflects the student's commitment to learning about leadership, innovation and self-improvement, which impresses employers.

Competitive advantage
Speakers share a goldmine of information about the qualities that employers seek in job applicants and the skills they expect on the job.

Multidisciplinary learning
Students hear the life experiences and accumulated wisdom of successful leaders from a variety of disciplines.

New in 2014
Engineering Leadership Minor or Certificate

UCF students can now minor in Engineering Leadership to build sought-after professional skills that employers want. A certificate option is also available. Courses include the Leaders Up Close Seminar Series, and business and marketing courses.

"A student transcript or resume with 'leadership' at the top is going to stand out," says Tim Kotnour, Ph.D., director of eli². "It shows that the student cares – and is prepared – to step into managerial and leadership roles at the workplace and is ready to contribute on day one of a job."

Three career paths are emphasized in the programs to enable students to become an entrepreneur, a sales engineer or a project engineer.

Skills Emphasized

CREATIVITY
Students unleash their creativity to generate and explore numerous ideas to solve a problem.

INNOVATION
Students learn to convert ideas into business value. This can spur entrepreneurial ways of thinking as students learn the business side of engineering.

COLLABORATION
Students work in teams, just as they do in the professional world. Teamwork builds critical thinking skills in ethics and trust; communication and presentation; discipline; professional savvy (like being on time and taking notes); and social responsibility.

WORLD-CHANGING SOLUTIONS
As they bring forth solutions, students develop skills in whole-system "big picture" thinking. They become global thinkers who consider human factors such as diversity and culture in their large-scale approaches to problem-solving.

New Engineer Credits eli²

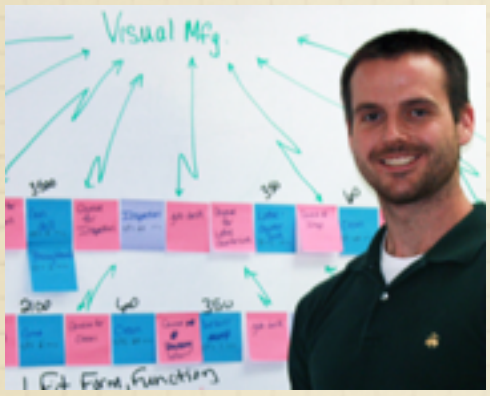
As a freshman, Matt Harrison was all set academically. He arrived at UCF from Cypress Bay High School in Weston, Fla., with a passion for space and a willingness to study.

And what Harrison didn't possess he gained through eli² programs that help students build professional skills beyond a degree.

"When I got to sit down in the seminar class for the first time," he recounts, "I was just floored."

As Harrison listened to the guest speakers, he learned precisely why. "They become your role models for that one-hour period. You get to learn everything from them, how they act, how they talk, the tricks of the trade."

"In that class, character counts more than anything else. High virtue, high moral standards make all the difference when you graduate."



Four days after graduating with an aerospace engineering degree in May 2014, he began at 3D Medical Manufacturing in West Palm Beach, Fla., where he gets to "solve problems all day." He's also been president of two engineering organizations at UCF: Theta Tau Professional Engineering Fraternity and the American Society for Engineering Education.

He credits eli² for much of his success. "I learned how to be a leader, and I learned how to communicate," he says. "You can't be an effective engineer if you can't share your vision with other people."

Meet the Leadership Interns

L-R: James Palmer, JC Perez, Donovan Williams, Addi Stone, Estella Gong, Richard Augustin

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Director of Interns
JC Perez
Junior, aerospace engineering. Also works on marketing and communication to build the eli² brand among students.

Impact Assessment
Estella Gong
Junior, computer engineering
Addi Stone
Senior, aerospace engineering

Marketing and Communications
James Palmer
Junior, industrial engineering

Professional Development
Karen Hoshino
Senior, mechanical engineering
Nicholas Mitchell
Junior, mechanical engineering and aerospace engineering

Project Management/Events
Richard Augustin
Senior, industrial engineering
Donovan Williams
Senior, mechanical engineering

Social Media
Patrick Sites
Junior, electrical engineering

From Dust to Sails

UCF College of Engineering & Computer Science

eli² Engineering Leadership & Innovation Institute at UCF

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