

Highlights Report
2014-2015
Purdue School of Engineering and Technology, IUPUI

The Success of Our Students

- Per the latest report from the American Society for Engineering Education, the **School of Engineering and Technology** ranks #3 nationally for the number of bachelor's engineering technology degrees awarded and ranks #2 nationally for total engineering technology degrees awarded to women.
- Per the latest edition of *U.S. News and World Report's* ranking of the Best Engineering Graduate Schools, only three schools with smaller engineering graduate enrollment than the **School of Engineering and Technology** were ranked higher than our School.
- The **School of Engineering and Technology** was ranked in the top 100 per the latest [edition](#) of *U.S. News and World Report's* ranking of Best Undergraduate Engineering Schools whose highest degree is the doctorate.
- The **School of Engineering and Technology** set an all-time record for degrees granted during the 14-15 academic year with more than 570 BS and 270 graduate degrees awarded.
- The 2014 **School of Engineering and Technology** post-graduate survey for BS degree recipients had a record-setting response rate of 82.7% and reflected an average salary of \$53,800 among engineering and technology BS graduates across all majors.
- Motorsports engineering student Grant Hankins researched techniques and methods to improve the safety of sprint cars. His work was featured by the [Discovery Channel](#) and [Fox59](#).
- Motorsports engineering student James French put his education to the test by competing in the prestigious [Rolex 24 Hours at Daytona](#), one of the biggest racing events in North America.
- Lucas Gramlin BS/MS student in electrical and computer engineering was awarded the [Smart Scholarship](#), sponsored by the Department of Defense, for extraordinary students pursuing STEM degrees with high national need.
- SafeBay, a team of three **School of Engineering and Technology** students, took home the judges' top prize of \$2,500 as well as the Audience Choice award of \$1,000 in the Fourth Annual [Ideas Solving Social and Economic Challenges](#) competition sponsored by IUPUI's Office of the Vice Chancellor for Research.
- The [Student Design Organization](#) (SDO) within the interior design technology program in the **School of Engineering and Technology** hosted the 15th annual student design show. SDO was started by and for interior design students at IUPUI as a way of fostering relationships with industry professionals and the community.
- The **School of Engineering and Technology** was awarded a charter to establish a [Tau Beta Pi](#) collegiate chapter during the 109th annual convention of the engineering honor society in Spokane, WA. IUPUI's chapter is known as Indiana Zeta.
- The **School of Engineering and Technology** motorsports engineering team demonstrated the improvements they had made to the School's MG racecar at the Sports Car Club of America races by placing second at the [Grattan Raceway in Michigan](#).
- **School of Engineering and Technology** mechanical engineering students teamed with students from two other universities to claim first prize in the [Nissan Design Competition](#) at the national conference of the Society of Hispanic Professional Engineers in Detroit.

- The Robotics Club at IUPUI participated in the Intercollegiate Robotic Football Combine at Notre Dame. The Jaguars were pitted against teams from Notre Dame, Valparaiso University, and Purdue University schools at Kokomo, Calumet and South Bend.
- Mechanical engineering students from the student chapter of the Society of Automotive Engineers (SAE) competed in the 2015 SAE Clean Snowmobile Challenge in Houghton, Michigan. The team placed 5th in the electric category of the competition.
- The Eco-marathon club with students from mechanical engineering competed in the Shell Eco-marathon Americas 2015 competition in Detroit, Michigan.
- A research project into the effect of altitude on solar panels was conducted by the Students for the Exploration and Development of Space (SEDS), overseen by the Lugar Center director. Ten students carried custom-built test gear to the tops of 5 Indianapolis skyscrapers and compared results to simultaneous measurements in Taylor courtyard on campus. Results were published at a national conference, with the SEDS president making the presentation.
- Students from the **School of Engineering and Technology** and Butler University engineering dual degree program formed a capstone team in an energy recovery project from the Indiana Central Canal. Using the 2,000,000 gallons per day flowing past White River State Park's Celebration Plaza, the students designed a system to water the green lawn using only the energy from the cascading water. The **Richard G. Lugar Center for Renewable Energy** teamed up with WRSP personnel to oversee the project which may be installed just south of the IUPUI campus.
- Together with the Indiana Hemp Industries Association, the **Richard G. Lugar Center for Renewable Energy** mentored a project with graduate students from the School of Public and Environmental Affairs. With industrial hemp now legal for university research in Indiana, IUPUI is now working with Purdue University's Agronomy department to develop cost-effective ways to use this versatile crop for the benefit of Indiana farmers.
- The **Richard G. Lugar Center for Renewable Energy** co-sponsored a mechanical engineering capstone design project to investigate a new concept for a highly-efficient electric motor. A new motor concept was presented by students to **Remy International** in Anderson, generating significant interest in the commercial possibilities.
- Research papers from four undergraduate students in the National Science Foundation funded Research Experiences for Undergraduates program hosted by the School of Engineering and Technology's computer and information technology program were published in the proceedings of two peer-reviewed conferences: First National Workshop for REU Research in Networking and Systems (REUNS 2014) and MobiPST: Workshop on Privacy, Security, and Trust in Mobile and Wireless Systems.
- Students from the **School of Engineering and Technology's [Living Lab program](#)** provided IT support for 29 database, web, security and networking projects for local non-profits and businesses.
- **School of Engineering and Technology** computer graphic technology students developed training videos for the Department of Homeland Security for the State of Indiana, animated commercial for Singleton Video, and videos for the youth philanthropy initiative of Indiana.

Advances in Health and Life Sciences

- Faculty members from the **School of Engineering and Technology** and the School of Nursing are investigating [music therapy](#) interventions to manage symptoms and promote positive health

outcomes in the cancer care setting, and working closely with care providers from the Indiana University Melvin and Bren Simon Cancer Center and Riley Hospital for Children Cancer Center at Indiana University Health.

- Analog Computing Solutions, Inc., a spin-up company founded on technology developed by a biomedical engineering faculty member with other collaborators from IUPUI, was spotlighted following the Internet of Things (IoT) World Event in the trade journal EE Times and the European trade journal Analog EE Times. The company in partnership with the Bioelectronics Lab at IUPUI and a grant from the National Science Foundation is developing a low power neural network chip to classify and translate neural signals for possible applications in neuroprosthetics, bioelectronic medicines, and active prosthetics control.
- A biomedical engineering faculty member was selected for a [National Science Foundation Early Career Award](#), the most competitive grant awarded to a junior faculty member, for his work related to a reversible dynamic hydrogel system for studying stemness and drug responsiveness of cancer stem cells.
- The Society of Student Constructors (SSC), in collaboration with the construction engineering management technology program and a committee of local industry leaders, presented The Next Big Thing: New Ideas in Healthcare and Construction. It consisted of 6 presentations by 7 speakers all addressing innovations in healthcare construction.
- The healthcare engineering technology management (HETM) program prepares students for one of the five best jobs [Money Magazine](#) says “you’ve never heard of.”
- The healthcare engineering technology management (HETM) program has collaborated with the Association for Advancement of Medical Instrumentation (AAMI) to establish a new lead society for the discipline. The HETM program director was named to the inaugural AAMI Credentials Institute group to oversee accreditation and certification activities.
- HETM will offer the first networking course focused on the clinical environment. Taught within Eskenazi Hospital, the students will explore the computing requirements of networking, electronic medical records system (EMR) and medical devices integration.
- **School of Engineering and Technology’s** computer graphics technology faculty member mentored 4 students in developing an initial prototype for a user-centric database tool for locating research resources on campus. This project was completed in partnership with the Herman B. Wells Center for Pediatric Research and iTech.

Contributions to the Well-being of the Citizens of Indianapolis, Indiana, and beyond.

- A **School of Engineering and Technology** faculty member and his students won the \$60,000 grand prize in an international competition to design a safe ultra-light vehicle. The winning design was selected from among more than 250 conceptual designs submitted in the Light weighting Technologies Enabling Comprehensive Automotive Redesign ([LITECAR](#)) Challenge.
- Faculty and students in the Transportation Active Safety Institute (TASI) within the School of Engineering and Technology were featured in the [Discovery Channel’s Daily Planet](#) show aired on May 21st, 2015 for their world’s advanced pedestrian crash mannequin system. This system can be used for testing and evaluation of pedestrian pre-collision systems for vehicle emergency braking systems and self-driving cars.
- The Transportation Active Safety Institute (TASI) developed and delivered the world’s first advanced articulated mannequin system to the U.S. National Highway Transportation Safety Administration Vehicle Research and Testing Center for mannequin technology evaluation for

standardized tests. One of TASI's sponsors Toyota Collaborative Safety Research Center has also acquired TASI's pedestrian mannequin system for their research and development efforts.

- A faculty member from electrical and computer engineering in the **School of Engineering and Technology** was named by the [Indianapolis Star](#) as one of "10 Influential Women in Tech: Making a Difference." Also, the same faculty member was a featured engineer in [EEWeb](#).
- Cell phones could be thinner and electric cars could go farther with technology and materials developed by the **School of Engineering and Technology** in conjunction with Argonne National Laboratory. The School's faculty and students are [advancing nano-structured materials](#) that have applications in energy storage (batteries and super capacitors) and energy conversion (fuel cells), among others.
- The [Industrial Assessment Center](#) within the School of Engineering and Technology conducted energy assessments for 43 Indiana manufacturing companies. The audits have resulted in recommended waste savings of \$5.5M and productivity saving of \$342K. The assessments resulted in recommendations for improving energy efficiency. The students were trained on real world engineering while the companies benefited from audit for energy efficiency improvement and cost reduction.
- [National Instruments \(NI\)](#) selected an engineering technology faculty member to be among the first group of 25 teachers and professors to participate in its Elite Educators program.
- **School of Engineering and Technology's** computer and information technology professor received a grant from the National Science Foundation to provide student travel support for the ACM International Symposium on Mobile Ad Hoc Networking and Computing Conference.
- U.S. Patents were granted to two research members of the **Richard G. Lugar Center for Renewable Energy**. The first is a new form of low-cost wind power, and the second is a method for producing hydrogen from biomass.
- **Richard G. Lugar Center for Renewable Energy** and the **School of Engineering and Technology** brought together elected officials, utility companies, energy professionals, and academic researchers in the Spring Forum, "[Energy Diversification in Indiana](#)." A total of 24 speakers and panelists covered the spectrum of new advances and opportunities for our State. Continuing education credits were made available to attorneys and professional engineers. Several new partnerships and collaborations have sprung up from this day-long event.
- Researchers from the **School of Engineering and Technology** affiliated with the Richard G. Lugar Center for Renewable Energy secured \$1.2M in funding for renewable energy projects. These range from batteries and fuel cells, to microbes, to micro-reactors, and waste-to-energy.
- Department of Engineering Technology faculty, staff, and students within the School of Engineering and Technology assembled a multi-disciplinary team and traveled to Swaziland to construct a home for a family utilizing sustainable construction techniques and methods.
- **School of Engineering and Technology's** Computer Graphics Technology Study Abroad program took 10 students along with 2 faculty members to Poland to teach and conduct workshops over a 30-day period. While in Poland the faculty and students taught both university and high school participants and presented an international "Animation Film Festival" in numerous cities throughout Poland. Over 1,600 Polish students and professional educators participated in the workshops and festival.
- Ten School of Engineering and Technology students got a behind-the-scenes look at the changing world of information technology last spring halfway across the world in India. The School of

Engineering and Technology's Computer & Information Technology students took a "[Global IT Management](#)" trip to India to explore the implications of international outsourcing.

- The National Science Foundation awarded the **School of Engineering and Technology's** Computer and Information Technology program a grant to lead a three-way university collaboration in [Building Virtual Research, Interactive, Service, and Experiential \(RISE\) Learning Components for Cyber Security Education](#). This project will promote recruitment and retention of CS, CE, and IT students for careers in cybersecurity
- School of Engineering and Technology's computer and information technology faculty member mentored students in a service learning course as they taught social media, internet skills, and email to senior citizens at Heritage Place.
- The Department of Technology Leadership and Communication within the School of Engineering and Technology provided IUPUI student tutoring and related support to Indianapolis Public Schools and other K-12 institutions as a result of external grants/contracts totaling over \$350K.
- The Minority Engineering Advancement Program (MEAP) within the School of Engineering and Technology hosted a total of 88 grade school, middle school, and high school students during the Summer of 2014. During June of 2015 MEAP hosted 45 high school students. Each summer, the program hosts students interested in learning more about engineering in several one week sessions. MEAP sponsors include: Applied Engineering Services, Crane Naval Surface Warfare Center, Covanta, Milestone Contractors, Roche Diagnostics & United Technologies Carrier.
- The preparing outstanding women for engineering roles (POWER) camp in the School of Engineering and Technology hosted a record 47 high school girls for the 9th annual residential camp.
- **School of Engineering and Technology's** computer and information technology professor was awarded funding from the Purdue Technical Assistance Program, which was used to support students working on projects with small Indiana business and non-profits.

Best Practices

- Two School of Engineering and Technology's computer and information technology faculty members collaboratively authored two papers in conference proceedings on 'flipping the classroom' and presented another session on using technology to enhance engagement in online classes.
- An [initiative](#) to attract more female students to engineering and technology programs at IUPUI was put into full swing. Female admits grew by over 20% in one year from the inception of the initiative.
- The **School of Engineering and Technology** partnered with the IUPUI Degree Completion Office to offer Organizational Leadership and Supervision and Technical Communication baccalaureate programs to degree completers.
- The School of Engineering and Technology liaised with the American Honor's Program at Ivy Tech to facilitate seamless transfer of high-ability students from the community college to the Organizational Leadership and Supervision baccalaureate program.