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Sunseeker team engineers their way to impressive finish at Formula Sun Grand Prix

Western Michigan University’s Sunseeker team placed in the top five at the Formula Sun Grand Prix - the team’s best performance since 2014.

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**Student saves middle school's robotics season**

Computer science major Jonathan Sanford shares his knowledge of JAVA to help Schoolcraft Middle School’s Robotics Club pull off a successful season.

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From mechanical engineering student to entrepreneur

College of Engineering and Applied Sciences graduate Dallas Chase credits opportunities available to him during his undergrad career with setting him on the path to entrepreneurship.

Metal casting: A different type of summer camp

High school students learn about metal casting from experts during metal casting camp at WMU.
Faculty members receive honors, present paper

New awards are decorating Dr. Timothy J. Green and Dr. Sam Ramrattan’s offices while Dr. James Burns travels to Florida to present a paper with a doctoral student.

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NASA internships have alumnus reaching for the stars

Three internships at two NASA sites have aerospace engineering grad Jacob Ganzak that much closer to fulfilling his dream of working for the agency fulltime.

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It starts with an egg drop: Students teach refugee children about science, math

Is it possible for an egg to survive a two-story fall onto concrete? Students with Western Michigan University's chapter of Engineers without Borders explore this question and more with children at the Refugee Education Center in Kentwood, Michigan.

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CEAS receives $40,000 grant from DENSO
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Students win Michigan Space Forum poster competition
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Student's logo design deemed one of the best
After five years of mostly self-taught design, graphic and printing science student Morgan Haskins decided to enter the Technical Association of the Graphics Arts Student Design Contest. The logo she redesigned was deemed one of the best, earning third place and a $100 award.
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Professor guides high school students to engineering competition wins

A team of local high school students recently won two prestigious engineering competitions thanks, in part, to the guidance of Dr. Pnina Ari-Gur, Western Michigan University professor of mechanical and aerospace engineering, and her students.

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KALAMAZOO, Mich. – Western Michigan University’s Sunseeker team celebrated its 30th anniversary with an impressive performance at the Formula Sun Grand Prix in Austin, Texas. The team started the competition by earning 10 green stickers as the third team to complete the scrutineering process and finishing in fifth place overall.

Dr. Mitchel J. Keil, a Sunseeker team faculty advisor, says the students put their all into the race. “The team proved one thing for certain: This team has heart,” Keil says.

2019 Sunseeker Team

Students
Will Barringer, Chemical Engineering
Marie Bridges, Electrical Engineering
Austin Gilbert, Electrical Engineering
Colin Haynes, Mechanical Engineering
Jacob Lutz, Electrical Engineering
Kyle Lyman, Aerospace Engineering
Andrew McCabe, Paper Engineering
Derrick Oldenkamp, Electrical Engineering
Nick Patzer, Mechanical Engineering
Regan Thorpe, Computer Science
Justin True, Computer Science
Cortney York, Industrial and Entrepreneurial Engineering
Alysia Zimmerman, Electrical Engineering

Advisers
Dr. Bradley Bazuin, chair and associate professor, Electrical and Computer Engineering Department
Dr. Mitchel Keil, professor, Engineering Design, Manufacturing and Management Systems Department
This year’s finish is a welcome return to the top-five in the single-occupant vehicle racing category at the FSGP – the first since 2014. It also capped the career of Sunseeker “Farasi” which has been active since 2016. The vehicle is expected to be retired and replaced by a new Sunseeker for the 2020 racing season.

**Overcoming challenges**

The Sunseeker team encountered some challenges along the way to the fifth-place finish but used their engineering knowledge to resolve them all, says Dr. Bradley Bazuin, chair of the electrical and computer engineering department and team faculty advisor. “With the continuing evolution of car and race requirements and some known challenges based on the current car's design and construction, we encountered several issues that had to be overcome in order to race,” Bazuin says.

“These challenges included modifying the brake system to allow documentation of expected pressures and performance, brake line repairs based on overheating during a tow, horn adjustments for higher decibel rating, minor body repairs for attachment points, and additional labeling for conformance to required warnings on emergency switches.”

Team project manager and aerospace engineering major Kyle Lyman of Marshall, Michigan, says adapting to unexpected challenges is an essential part of the race. “There is a notion that nothing should go wrong, as you have just spent the last year preparing the car. Though, no matter how talented the team and no matter how innovative the engineering, things happen,” he says. “So, one of the most significant challenges to our success is being able to adapt to the situation and fix problems quickly.”

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In 1989, a group of College of Engineering and Applied Sciences students formed WMU's Sunseeker Solar Car Project to promote and demonstrate the use of solar and alternate energy systems and technology. The students design, build, and maintain the solar vehicles and participate in one major race each year. The team first competed in 1990.
Teamwork above all else

Working together is a key to the team’s success, Lyman says. “The other major challenge is maintaining your composure during the chaos of the race. It’s Texas, so it’s hot and humid. You are working 15-hour days where you are moving nearly nonstop, and you are thinking critically the whole time. It’s difficult to stay sharp for the entire race,” Lyman continues. “You also have to be cognizant of your teammates. In such a high-stress environment, you have to make sure that you are taking care of each other.”

Bazuin is impressed with the team’s cooperation and work ethic. “The students worked together to form a highly functional team for the race,” he says. “Problems and issues were quickly identified, and solutions collaboratively developed.

“Of note during the race, there was significantly improved telemetry data access and software that allowed a much closer monitoring of energy availability, energy use, and battery state-of-charge on a per lap basis,” Buzuin says. “With this information, team members defined and followed a more advanced race strategy, allowing the team to maximize the number of laps achieved and continue running until the checkered flag on the final day of racing.”

Keil says that WMU’s Sunseeker team stands out from many of its competitors for how much of their car they build themselves. “Some teams have solar arrays built that may cost up to $1,000,000. Our array costs a little under $7,000 for materials, along with hundreds of student hours spent assembling and encapsulating panels for the array,” Keil says. “Our quality does not match that of a $1,000,000 array, yet we are competitive.”

This extra effort has led to further opportunities for some team members. “Because we build our array, we have attracted students interested in sustainability which has led some into research related to novel semiconductor development,” Keil says.
Always there to help others

While the team was busy working on their vehicle, they carved out time to support the on-track racing and assist other teams. Race organizers recognized them for volunteering for multiple shifts as race corner workers and providing help to other teams working on completing scrutineering and compete on the track.

“A unique aspect of solar races is the collaborative environment that exists. All teams are happy to provide significant help when other teams need it. This includes sharing spare parts and materials as well as students’ and advisors’ time so that as many team cars succeed, participate and race as possible,” says Bazuin. “As compared to highly competitive athletic competitions, it is unique to help and root for everyone.”

CEAS computer science student saves middle school’s robotics’ season

Sanford testing the robot with students.

Jonathan Sanford working with the Schoolcraft Robotics Team.
When Schoolcraft Middle School Robotics Club advisor Dr. Donya Dobbin realized the team’s robot would need to be programmed using JAVA, a skill no one affiliated with the club had, she knew just where to turn. Dobbin jotted off an email to Dr. Steve Carr, chair of Western Michigan University’s computer science program, asking if a College of Engineering and Applied Sciences student might be willing to mentor her students.

Jonathan Sanford, a computer science student who will graduate in December 2019, stepped forward. Dobbin says Sanford’s volunteer efforts saved the team’s robotics season.

“Jonathan's involvement was vital,” Dobbin says. “Without him, we may not have been able to compete at all. The robot needed to be programmed using JAVA and I had no other mentor that had that knowledge.”

Sanford says this was a new experience for him and he got involved because it sounded like a fun extracurricular activity. Though busy with his own coursework, he traveled to Schoolcraft twice a week for two months to be at all the team’s practices. Sanford was with the team from the beginning as they dissected the game and developed a strategy through to the end of a successful season.

The successful season included competing in two FIRST Robotics competitions, one in Constantine, the other in Coloma. “The team made the elimination rounds in both events for the first time in the history of the club,” Dobbins says.

While at the competitions, Sanford assisted by tweaking the program code, so the robot would do whatever the team needed it to do. “None of the students had been introduced to programming,” he says. “I had to break it down and explain to the students. Students would tell me what the robot should be doing, and I would show them how to program it for that function.”

Now that Sanford has experience with the “fun and stressful” robotics competitions, he plans to be back helping the Schoolcraft team again next year. Helping to guide the team to a successful season was satisfying but most of all Sanford enjoyed working with the students. “I loved seeing
the excitement on students’ faces and their reactions when the robot was doing something it wasn’t supposed to be doing,” he says.

Experiences gained at WMU inspire grad to launch business

Dallas Chase ’16 went from Western Michigan University mechanical engineering student to founder of an e-commerce machine shop in two short years. He credits opportunities available to him during his undergrad career – from internships to career fairs – with setting him on the path to entrepreneurship. Particularly, Chase points to the College of Engineering and Applied Sciences’ engineering career fair and the internships that followed with giving him the experience necessary to start his business, Ai Machineshop, based in his hometown of Richland, Michigan.

“The College of Engineering and Applied Sciences raises up strong engineers,” Chase says. “The engineering career fair and other career fairs allowed me to land important engineering internships early in my education.”

During internships at Denso and Tesla and an early-career position at Denso, Chase gained knowledge and confidence as well as the idea for his emerging business. Chase noticed what he thought was an excessive amount of time to take a part from the idea stage to fruition. Why, he wondered, can’t a business harness the power of the internet to drastically shorten this time frame?
So, Chase started Ai Machineshop which does just that by bringing eCommerce to machine shops. “We provide online instant quoting and ordering for custom metal parts,” he says. This instant quoting and ordering are what sets Ai Machineshop apart. “If you had to quote 100,000 parts using our competitors’ sites, it would take you about a full years’ worth of your time to create all of the quote requests. That’s a huge waste of your time. Our service wouldn’t take more than a minute of your time to create quote requests for all of those parts.”

After a quote and part design are accepted, Chase works with local machine shops to produce the parts. “At first glance, local machine shops might be viewed as competitors but, rather than opening a new shop that provides the same services and try to battle against other shops, we’ve partnered and work with a lot of local shops to make the existing system and services much more efficient.”

Currently, Ai Machineshop offers laser cutting, waterjet, bending, welding, drilling, and tapping.

**Advice for aspiring entrepreneurs**

Chase has some advice for current students who aspire to start their own business. The first piece of advice is to be humble and have the courage to share your ideas and ambitions with others.

“You probably think you have a bunch of great ideas and don’t want to share them with anyone,” he says. “You’re going to need to navigate those fears. In all honesty, ideas don’t matter much, execution matters. Other entrepreneurs have their own ambitions that they are chasing rather than getting distracted in ‘stealing’ yours. If you don’t share your ideas, you sacrifice the opportunity to learn freely from others and fail to start.”

Chase recommends budding entrepreneurs begin as soon as possible. “If you seriously want to start a business, don’t wait – start now. Tell people. But keep learning, do well in school, get internships, get involved, and keep your eyes out for a problem to solve.”

**Warm memories of WMU**

While Chase worked hard as a mechanical engineering student, there was time left for play. “My favorite memories that the College of Engineering and Applied Sciences helped facilitate are the memories my classmates and I made outside of the classroom.” He remembers playing touch football and late night/early morning Super Smash Bros. tournaments especially fondly.

He points to participating in registered student organizations as another highlight of his undergrad years – including meeting his wife, Kelli, during involvement with the student organization, Cru, an interdenominational Christian ministry. “Student organizations allowed me
to develop deeper meaningful relationships while investigating world views and beliefs. It’s the relationships that were formed through Western and the WMU College of Engineering and Applied Sciences that turned into thriving friendships outside the classroom.”

High school students learn metal casting from WMU expert

While their friends were sweating it out at sports camps this summer, a group of high school students experienced a unique camp: metal casting. For the past 21 years, this hands-on, one-week camp has been led by Dr. Sam Ramrattan at Western Michigan University. During the students’ five-day campus visit, Ramrattan, a technical advisor to the American Foundry Society and a Key Professor for the Foundry Educational Foundation, directs activities in the College of Engineering and Applied Sciences metal casting laboratory.
Dr. Sam Ramrattan oversees students as they pour molten metal into the mold.

Workshop topics include metal casting history and trends, and the relationship of casting (gravity, investment, low and high pressure die) processes, manufacturing engineering (molding, melting, filling, and finishing) and quality of castings. They explore the use of computers, math and science in metal casting. In addition to their lab and course work, the students met with WMU administrators to discuss university admission and with professionals from the metal casting industry to learn about career opportunities.

WMU has had a casting metal program in various engineering curricula since the college opened more than 113 years ago. Today, casting students at WMU gain hands-on experiences in gravity, high pressure and solidification simulation of metal casting processes. Field trips to metal casting industries provide students with opportunities to see real-world technology and to meet with professionals. The attendees toured the metal casting facilities at the Eagle Group and the Port City Group in Muskegon, Michigan.

Students, who are selected based on an aptitude for math and science, stay in WMU residence halls and experience campus life. Sponsorships provided by various chapters of the American Foundry Society and the North American Die Casting Association enable the students to attend the camp for free.
Dr. Timothy J. Greene honored with distinguished service award

Dr. Timothy J. Greene, professor of Industrial and Entrepreneurial Engineering and Engineering Management, has received the Fred C. Crane Distinguished Service Award from the Institute of Industrial & Systems Engineers. The award recognizes an individual’s contributions to the Institute of Industrial and Systems Engineers for devoted service to the institute. Greene’s involvement with IISE include:

- Serving as president from 1997 to 1998;
- Serving on the board of trustees from 1991 to 1999 where he held several senior vice president positions;
- Serving as director of conference program coordination for more than six years;
- Receiving the IISE Outstanding Young Industrial Engineer Award;
- Being elected Fellow of the Institute of Industrial and Systems Engineering in 1999.

Green has more than 31 years of experience as an engineering leader and manager in various roles including serving as Western Michigan University’s provost and vice president for academic affairs for nine years and dean of the College of Engineering and Applied Sciences.
Prof. Sam Ramrattan honored for 25-years of metal casting research

For 25 years Dr. Sam Ramrattan has been conducting American Foundry Society-sponsored research on alternatives to silica sand in metal casting. This AFS-sponsored research and development have led to a better understanding of overall sand technology. AFS honored Ramrattan and asked that he present an update on his research to the society. Ramrattan’s Silver Anniversary Presentation was an update to his paper “Study of Foundry Granular Media and Its Attrition.”

Alternative molding media must be evaluated to control production costs in the metal casting industry, Ramrattan says. These alternatives must withstand breakdown and overcome the drawbacks of silica, Ramrattan says. The presentation identified granular media that are readily available as functional alternatives to silica sand. Suitable substitutes to silica sand mean better quality of casting, less scrap and increased productivity.

Course redesign study paper presented in Florida

Does the Industrial and Entrepreneurial Engineering course, 2610 Engineering Statistics, meet the needs of today’s students? Jim Burns, associate professor of industrial and entrepreneurial engineering and engineering management, and doctoral candidate Megan Hammond recently completed an initial study of the course to see if the course’s content and teaching methods align with the current needs of engineers. The two traveled to Tampa, Florida to present their paper “Redesigning a Multidisciplinary Engineering Statistics Course,” to the American Society for Engineering Education Annual Conference & Exposition. The study’s results will contribute to a planned redesign of the course, which will become part of the Western Essential Studies program.
Out-of-this-world internship launches alum toward astronaut goal

Contact: Erin Flynn
July 9, 2019

KALAMAZOO, Mich.—Internships often serve as launch pads for future careers, but a Western Michigan University student took that literally.

"My ultimate goal is to become an astronaut," says Jacob Ganzak, who took a giant leap toward that goal by securing multiple internships at NASA.

From testing shields on oxygen tanks headed for space to working on launch towers for space shuttles, Ganzak was granted access to projects few college students ever receive.

"It's probably the coolest job for a student still in college, or for anyone for that matter," says Ganzak, who graduated in April with a bachelor's degree in aerospace engineering.

As an upper level student in 2017, Ganzak found himself looking for ways to stand out in the competitive engineering field. After hearing about a colleague's experience doing research for a NASA consortium, the Fenton native got to work himself.

"I thought, why haven't I been trying to find a NASA internship? I'd been looking locally and decided to try for the 'big dog,'" says Ganzak.
Ganzak conducts an outer diameter measurement on an aluminum liner at the White Sands Test Facility. Through the Universities Space Research Association, Ganzak began to explore his options. He soon received a call from NASA's White Sands Test Facility in Las Cruces, New Mexico, where the space agency tests and evaluates potentially hazardous materials. Ganzak started his internship as a nondestructive test engineer in June 2017, the only engineering intern accepted at the time.

"For my first internship, it was kind of nerve wracking," Ganzak says. "But that's the best way to learn—to get thrown into it."

The bulk of Ganzak's research at White Sands involved testing composite overwrap pressure vessel liners. They protect tanks that carry oxygen and nitrogen to astronauts at the International Space Station. Using lasers, Ganzak and other engineers tested the liners for imperfections and defects that could impact their performance.

"It has to be very rigid to hold the pressure," says Ganzak. "If the liner itself isn't rigid, it could blow up."
Adding a COPV to a tank substantially increases its weight. To help connect the massive tanks to the testing system, NASA tasked Ganzak with designing a hoist. "The majority of my experience was taking a visual concept in my head, sketching it out on paper and validating it through 3D modeling," Ganzak says. "I showed it to the board and it actually was fabricated and is currently being used at the facility."

The project gave Ganzak a chance to put what he'd learned in the classroom to work. "A lot of the calculations I made were through mechanics and materials that I learned at Western. I was excited that I took something from my academic knowledge and used it in a real-world situation and it worked," says Ganzak. "Its' a very satisfying feeling to have."

**LANDING AT LANGLEY**

Ganzak and colleagues prepare to enter a hypersonic sphere at Langley Research Center.
Ganzak's supervisors were so impressed with his work that they recommended him for another NASA internship, this time at the Langley Research Center in Hampton, Virginia.

He secured a position on the Flow Physics and Control Branch—the same team his mentor, aerospace engineering professor Dr. Tianshu Liu, was a part of before he came to WMU.

The research Ganzak performed at Langley involved testing ways to increase cruise efficiency on commercial jets.

"When a plane approaches the runway, all of the weight wants to sag the plane down. So you need something to produce more lift force so it doesn't hit the ground so fast."

In order to offset the force, most planes have flaps that deploy to increase surface area and keep the aircraft elevated. The pylons that house those flaps, however, create substantial drag during the rest of the flight. Ganzak worked on a system to eliminate the need for the pylons under the wing.

His work did not go unnoticed.

"In his short time at Langley Research Center, he has become a sought-after asset across organizational boundaries as many had requested his technical support, particularly in computer-aided design," wrote senior research engineer Dr. John Lin in a letter of recommendation.

**READY FOR LAUNCH**

Ganzak's success at Langley led him to a third opportunity with NASA, this time at Kennedy Space Center in Cape Canaveral, Florida. It put him in the center of the space agency's launch operations.
"Right now NASA is working on the Space Launch System, which is the new generation of rocketry that will take astronauts into what they call deep space," says Ganzak.

As a member of the Launch Accessories Branch, Ganzak worked on the launch tower that will eventually support the rocket planned to blast off into deep space.

"It's supposed to be bigger than the Saturn V, which is the rocket that took astronauts to the moon. That's the biggest rocket that's ever been used, and this is supposed to be bigger than that."

Ganzak designed hinge mechanisms so that the massive umbilical arms, which stabilize and provide fuel to the rocket, can swing out of the way at liftoff. The work involved going through old NASA designs and modifying them for modern use.

By the time his third internship wrapped up in May 2018, Ganzak had gained extensive real-world experience in his field and built a reputation as an excellent candidate for future employment at NASA. He'd also fulfilled part of a childhood dream.

"You get to be part of the future, designing and creating things now that shape the scientific machine for generations to come."

BACK TO THE CLASSROOM

The NASA flag is displayed at a launch pad in Cape Canaveral, Florida. (NASA)

Coming back down to earth after his time at NASA was daunting.
"I thought it would be hard to come back and finish, transitioning from the field back into academics," Ganzak says. "I actually jumped right back in and increased my GPA a little in the process.

Working at NASA also opened up some doors for undergraduate research opportunities back at WMU.

"Ford Motor Company had talked to Dr. Tianshu Liu (about aerodynamics testing), and he personally gave me the project because it utilized a wind tunnel, which I have a lot of experience in working at Langley," says Ganzak. "It's amazing to be able to do research like that as an undergrad."

Ganzak says opportunities like that--and faculty like Liu--are what drew him to WMU in the first place.

"A lot of the professors at WMU have come from different industries such as NASA or top agencies in other countries," Ganzak says. "We bring international knowledge to the table. The faculty is the strongest card in the deck of what Western's engineering campus has."

Now that he's graduated, Ganzak is considering graduate programs to continue on his current trajectory that could land him his dream job. But even as he shoots for the moon, he remains grounded

"The sheer atmosphere of working towards the new frontier of space exploration will always excite me."
Building a cultural bridge, engineering students teach refugees about science, math

Contact: Erin Flynn

July 9, 2019

A student at the Refugee Education Center raises his hand during a presentation by the WMU chapter of Engineers without Borders.

KENTWOOD, Mich.—Kids bursting with energy from a long school day dart back and forth across a room. They gather in groups, conversing in various languages. All of these children are refugees, coming from different countries with their families—fleeing obstacles like poverty and violence in search of a better life.

Today, they're finding a common language in science.

Western Michigan University's chapter of Engineers without Borders designed a project for children at the Refugee Education Center in Kentwood, which provides kids in kindergarten through 12th grades after-school tutoring, summer literacy programs, and socio-emotional and career exploration opportunities.
"It's important to bring in groups like Engineers without Borders to allow the children to experience various career options within science, technology, engineering, arts and math fields," says Alison Kummer, student support coordinator for the Refugee Education Center. "Students need access to hands-on experiences to pique their interest and build confidence in areas of STEAM."

Members of Engineers without Borders crafted a "classic" egg drop project, asking kids to create a vessel to keep the fragile cargo intact while being dropped from a second-story balcony.

"It was something to get the kids thinking about impacts and how you can design something to better suit a situation," says Kaden Allen, an aerospace engineering student.

Breaking the children up into groups and getting them to collaborate proved challenging at first, but once a stash of Popsicle sticks, foam, rubber bands and other various supplies were unleashed on the groups, the creativity started flowing.
"There was a little bit of bickering amongst some of the groups, but once everyone came back for the actual egg drop, everybody came together," Allen says. "They were all super excited. Everybody was chanting, and it was just a really fun moment."

"Our goal wasn't to necessarily teach the kids high-level engineering concepts," says Paul Marsh, an electrical engineering student and local project lead for Engineers without Borders. "The most important thing we wanted them to get out of this was to just have a lot of fun and get excited about this type of stuff."

**GIVING BACK**

Projects like the one at the Refugee Education Center give WMU engineering students an opportunity to practice their craft while also giving back to the community.

"Everyone on this team loves engineering, and we wanted to make an impact on those who don't have many of the same opportunities we had growing up," says Marsh.

The impact was evident seeing the children's eyes light up during a question-and-answer session, as Allen explained that an aerospace engineer works on airplanes and rockets.

"When kids at REC are allowed to do experiments, build, work as a team and create something, they are learning the valuable skills of creativity, collaboration, communication, failure, achievement and reflection," Kummer says. "These are skills that they will carry with them as they enter the workforce and become contributing adults in our society."

Marsh recalls his own experiences with science and math as a child.

"We had robotics clubs and other programs that allowed us to explore engineering from a young age," says Marsh. "I can only imagine where I would be if no one did that for me."
FUTURE PROJECTS

Marsh checks to see which eggs survived the drop.

The WMU group is already working on other potential projects for the Refugee Education Center to get the children engaged and excited about science and math.

"We don't want something too hard for the kids, because we don't want to disassociate them from these concepts," says Marsh.

Kummer says she's excited to work with the engineering students again.

"We are impressed by their preparation, genuine interest and passion in their own field of study, their eagerness to engage with the students and ability to break down complex concepts into bite-sized pieces for language learners here at the center. We look forward to continuing our collaboration."

In addition to the local project, Engineers without Borders is also involved in a long-term international project to provide clean water to a community in Nicaragua.

In December 2017, members traveled to San Antonio de Upa to learn more about the need for clean water and begin the process of conceptualizing a system to deliver it to the community.

Since then, the chapter has conducted fundraising and begun designing a system to pipe water to the community, filter it and store it for future use. Students are currently working on design calculations and drawings, collaborating with engineers in the United States and abroad, and developing resources about clean water management to give the community.

With a travel ban to Nicaragua recently lifted, WMU’s Engineers without Borders chapter hopes to visit San Antonio de Upa in the spring of 2020 to implement its project, provided its plans are approved by the national Engineers without Borders organization.

Questions about current or future projects can be emailed to ewb.wmich@gmail.com.
Western Michigan University’s College of Engineering and Applied Sciences has received a $40,000 grant from DENSO for programs focused on science, technology, engineering, and math (STEM).

Grants were awarded to programs focused on design, materials management, mechanical and electrical engineering principles, thermodynamics, robotics and more. This grant will be used in support of the college’s three student vehicle design teams. Every year these teams design, manage, and participate in events that draw competitors from all over the world.

“This grant provides a foundation for the teams to design and develop our next generation of vehicles, continually advancing on past performances and incorporating new materials, components, and innovations for racing in 2020 and beyond,” says Dr. Bradley Bazuin, chair of the electrical and computer engineering department and faculty advisor for the Sunseeker Solar Car racing team. “We’re grateful for the opportunities this grant will offer to the students.”

The three teams that will benefit from the grant are:

- The Sunseeker Solar Car racing team, which develops a solar-powered vehicle for the Formula Sun Grand Prix and the American Solar Challenge. The team recently finished fifth at the Formula Sun Grand Prix in Austin, Texas.

- The Formula SAE team, which responds to a challenge from the Society of Automotive Engineers (SAE) asking colleges and universities around the world to design and build small-scale, Formula One-style cars.

- The Baja SAE team, which takes part in competitions sponsored by SAE that test engineering and design capabilities as students build and compete in small, off-road vehicles across North America.

“Being involved in these competitions exposes students to real-world engineering design projects and their related challenges,” said Dr. Andy Kline, associate dean for research and graduate
education, who serves as advisor to the Baja team. “Team members have to design and build an off-road vehicle that will survive the severe punishment of rough terrain.”

The grant, which is made possible by the company’s philanthropic arm, DENSO North America Foundation (DNAF), is one of 26 grants awarded by DENSO in 2019 to colleges and universities throughout North America. The donations are part of DENSO’s broader efforts to cultivate tomorrow’s workforce and prepare young thinkers to lead a new era of innovation. DENSO is the world’s second largest mobility supplier.

DNAF has supported STEM education through grants at colleges and universities since 2001, enabling students to access tools, technology and experiences that better prepare them for technical careers after graduation. DENSO education grant proposals are invite-only and evaluated based on technical merit, student experience, and alignment with industry needs.

“Investing in tomorrow’s workforce is critical to ensuring we have individuals who are equipped to help DENSO fulfill its vision of creating software and products that enhance safety and reduce environmental impact,” said Bill Foy, senior vice president of Engineering at DENSO and a DENSO North American Foundation board member. “Through these grants, we hope to create a generation of innovators who inspire new value for the future of mobility.”

**WMU aerospace engineering students win poster competition at the Michigan Space Forum**

Congratulations to CEAS aerospace engineering students Nick Nuzzo and Andrew Wilchynski for winning the poster competition at the Michigan Space Forum. They received a $1,000 award.
for their poster on the WALI CubeSat, titled "Optical Plasma Spectroscopy CubeSat (OPS-Cube)." Way to go Nick and Andrew!

"Optical Plasma Spectroscopy CubeSat (OPS-Cube)

Student Morgan Haskins’ logo redesign deemed one of the best
After five years of mostly self-taught design, Graphic and Printing Science student Morgan Haskins decided to enter the Technical Association of the Graphics Arts (TAGA) Student Design Contest. The logo she redesigned was deemed one of the best, earning third place and a $100 award. TAGA said it is “quite an accomplishment given the scrutiny all of the logos received and the professional design experience of the judging panel.”

Haskins, who is from Brighton, Michigan, entered the contest because she wanted to represent CEAS’ Graphic and Printing Science department and gain some professional graphic design experience. After graduation in Spring 2020, Haskins would like to work as a UX/UI Designer or as a graphic designer for a branding agency. It seems like she’s on her way. Congratulations!

High school students win impressive engineering competitions under WMU professor’s guidance

A team of local high school students recently won two prestigious engineering competitions thanks, in part, to the guidance of Dr. Pnina Ari-Gur, Western Michigan University professor of mechanical and aerospace engineering, and her students. Kalamazoo Area Math and Science Center students Anna Puca and Julia Strauss first won the Southwest Michigan Science and Engineering Fair for their project SmartCane Mobile Application for the Wearable White Cane.
Their project was part of the Virtual White Cane that WMU students are developing under Ari-Gur’s mentorship.

Winning the local competition qualified Puca, a junior at Kalamazoo’s Loy Norrix High School, and Strauss, a Portage Central High School junior, for the international Intel Science and Engineering Fair (Intel ISEF) where they won the Joining Forces for the Community Award presented by GoDaddy. The Intel ISEF, a program of Society for Science & the Public, is the world’s largest international pre-college science competition.

Congratulations, Anna Puca and Julia Strauss! We’re proud to have you as part of the College of Engineering and Applied Sciences’ community.

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