

YEAR IN REVIEW 2016 - 17

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

GONZAGA UNIVERSITY



School of Engineering
& Applied Science



Dear Friends of Gonzaga SEAS,

Our School continues to see extraordinary growth in its students, faculty, and vision. The year has witnessed hiring of new faculty, a record number of senior design projects, increasing levels of faculty / student collaboration in research, and initial plans to collaborate with the College of Arts and Sciences on a new Integrated Science and Engineering Building. It has been a special year!

Our Students:

Our students have fully embraced the opportunity to help define their own senior-design projects. Nearly one-third of our record 63 senior-design projects this year were proposed and refined entirely from student ideas. Many of these student-defined projects were among the finest completed by our seniors this year – our students have some truly amazing ideas! One of our students, Ms. Kristina Spring, has brought honor to our programs as the recipient of our SEAS Excellence Award. A computer science major with a math minor, Kristina established our Women in Computing Club and received a scholarship to attend the Grace Hopper Celebration of Women in Computing – the first Gonzaga student to ever attend this prestigious conference! I invite you to read more about this exceptional graduate in the pages within this report.

Our Faculty:

Dr. Brianna Dorie, who joined us last fall, has designed and offered our new 6-credit introduction to the engineering disciplines for freshmen. With nearly 200 freshmen engineering intents in her class, Bri collaborated with several faculty in our School to provide these students with an introduction to the engineering disciplines, initial experiences in programming in the MATLAB language, and opportunities to develop their writing and teaming skills. This was a great start to a new, innovative course offering.

For this coming fall, we are pleased to let you know that we will be joined by two new faculty members. Dr. Gina Sprint, a new member of our Computer Science faculty, has a Ph.D. from Washington State University, and brings exceptional skills in computer methods for data mining with particular application in the medical fields. Dr. Meirong (Mary) Zhang, a new member of our Electrical and Computer

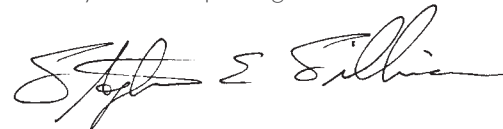
Engineering faculty, also has a Ph.D. from Washington State University, and brings expertise in multiple strategies for distributed control systems and estimation. You can read more about both of these new additions to our School in the pages of this report. Welcome to Drs. Sprint and Zhang!

The Integrated Science and Engineering Building:

In last year's report, we outlined initial plans for a new Integrated Science and Engineering Building. I am pleased to note that architectural design has started on this new building. The facility will provide exceptional teaching and research laboratory spaces, large new specialized student project spaces, innovative new classrooms, faculty offices, a variety of student gathering and study spaces, as well as an innovation laboratory. Initially focused on the new freshmen engineering course sequence, this innovation laboratory has exciting potential to attract interdisciplinary teams from across Gonzaga's disciplines to collaborate on innovative, entrepreneurial project ideas. Please read on for an update and vision of this unique foundation for innovation on the Gonzaga campus.

In closing, I have had the wonderful opportunity to meet and become close to an increasing number of you, our alumni and friends, over the past year. These are exciting times for the School and for the University. The faculty, staff, and students of the SEAS very much appreciate your support, your ideas, and your prayers for our continued success!

Thank you for the privilege and honor of allowing me to share our School with you.



Stephen E. Silliman
Dean of Engineering & Applied Science



INTERNATIONAL AUTONOMOUS SUB COMPETITION CHALLENGES STUDENTS' COMFORT ZONE

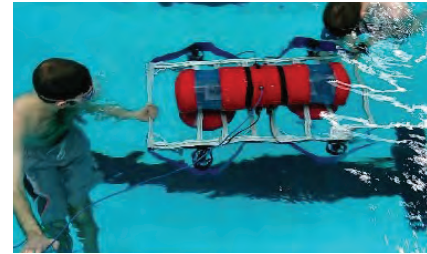
The SEAS student clubs offer many distinctive opportunities for learning, growth and pushing the boundaries of students' perspectives and ideas. One of these opportunities comes in the form of a project-oriented student club: Gonzaga RoboSub. The RoboSub club is working toward building an autonomous underwater vehicle to compete in an international RoboSub competition. The organizers of the annual international competition are motivated by the challenge of designing autonomous underwater vehicles (AUVs), as well as finding innovative ways to develop ties among young, talented students interested in AUVs.

Gonzaga Club President and computer engineering major Tyler Willis ('19) noted, "There are not too many students who have experience with this kind of project, so we have had to learn a lot on our own." There is a strong sense of camaraderie within the club. Said Willis, "As long as students are willing to try something new and move out of their comfort zone, we are more than willing to make them part of the team."

Formed in 2014, the club has been gaining momentum ever since. Meeting twice a week, students are provided a challenging, hands-on project. Three disciplinary groups make up the team – mechanical engineering, electrical engineering, and computer science, each with its own team lead. The most recent efforts include using a Raspberry Pi 3B for high-level mission control and an Arduino Mega as the micro controller unit. Multiple programming languages have been used to program the sub.

The club led its first full underwater test this year in the Rudolph Fitness Center pool on Gonzaga's campus providing the team with real-time measures of the functionality of the sub in terms of moving vertically within the water, as well as the stability of the sub's orientation in a fully submersed environment. The members of the club are looking forward to adding additional sensors as a foundation for implementing full autonomy of motion in their AUV.

Gonzaga RoboSub is one of 14 student clubs and professional societies within the School of Engineering and Applied Science that are providing exciting and innovative experiences for our students. These clubs collaborate, coordinate and support each other through the SEAS club president's council, which meets once per month during the academic year.



Rudolph Fitness Center swimming pool.
Photo credits: Gonzaga RoboSub



Completed RoboSub chassis.

ISPAX 2017 ENHANCES ENGINEERING STUDENTS' PROFESSIONAL AWARENESS

Gonzaga's chapter of IEEE (Institute of Electrical and Electronics Engineers) hosted an event providing students with the opportunity to converse on a personal basis with a number of active professionals. Designed and run entirely by student members of IEEE, the event is called SPAX (Student Professional Awareness Experience) and follows a model designed by IEEE-USA to enhance the leadership, career, and professional development skills of engineering and computer-science students.

SEAS-IEEE students invited seven industry professionals to Gonzaga to engage in student-led, small-group discussions, including:

- Greg Rzepka, Director Power Systems, SEL (Schweitzer Engineering Laboratories)
- Stephen Heath, VP of Security Systems, Intrinium
- George Moore, Fellow, Keysight Technologies
- Bob Conley, President and CEO, Eigen Wireless
- Lee Steensland, Principal Engineer, F5
- Lynn Vershum, Controls Engineer, Alliance Machine Systems
- Calvin Howard, Protection Systems Engineer, AVISTA

The event, which included a catered dinner featuring a keynote presentation from Chuck Frandrup, retired Engineering Director, Pend Oreille Public Utility District, was very well attended, with each small group containing 5-7 students.



Stephen Heath, VP of Security Systems, Intrinium, shares his background and experience with SEAS students.

Photo credits: Crystal, Murray-Weston



George Moore, Fellow, Keysight Technologies, encourages students on their professional path.

The students had the opportunity to discuss with each professional topics like career path and progression, intricacies of their daily work, and the different fields represented by each of the professionals. Disciplines represented at the event included Controls, Communications, Computer Science, Digital Systems, Electronics, Electromagnetism and Power Systems.

ENGINEERING ALUM GIVES BACK

Together with WM Symposia, a non-profit organization dedicated to providing education and information exchange on global radioactive waste management, Jack McElroy ('63) has established the Jack L. McElroy & WM Symposia Endowed Fellowship in Engineering & Applied Science. This fellowship will provide financial incentives for students to become involved in research projects and professional conferences through the School of Engineering and Applied Science.

In 1963, McElroy graduated from Gonzaga with a degree in chemical engineering. Throughout his more than 50-year career in chemical engineering and nuclear waste management, he has been internationally recognized and highly respected for his work, for which he was awarded the Wendell Weart Lifetime Achievement Award by Sandia National Laboratory and WM Symposia in 2013. In true Zag fashion, McElroy has also been committed to contributing to his community, serving as the Chairman of the Tri-Cities Salvation Army Advisory Board and member of the Kiwanis of Richland, Washington. He also served on Gonzaga's School of Engineering and Applied Science's Advisory Board from 1990 to 2004.



back row: Tailian Chen, open award; Linda Tredennick, teaching excellence; Andy Goldman, professional contributions; Kevin Hekmatpanah, academic citizenship; Scott Starbuck, teaching excellence.

Front row: Anny Case, open award; Joe Johnston, service learning; Bonni Dichone, professional contributions; Suzanne Ostersmith, collaborative work/innovation; Cate Siejk, professor emerita; Shannon Dunn, teaching excellence.

SEAS FACULTY AWARD WINNER HONORED

The School of Engineering and Applied Science is pleased and proud to announce that Dr. Tailian Chen was honored at this year's Academic Honors Convocation. Dr. Chen, Associate Professor, Mechanical Engineering, received the 2017 Open Award.

The Open Award is based on nomination by students or fellow faculty and is given to recognize a faculty member for exemplary work that is innovative and represents unique contributions to their teaching and profession. Dr. Chen was cited for a number of contributions to our students and Gonzaga Community. In particular, his prolific research, excellence in teaching and mentoring students, as well as a truly collaborative spirit, were all acknowledged as contributions Dr. Chen has made to the School and his profession.

"At Gonzaga, I feel striving for excellence is not just a slogan, but happens everywhere inside and outside the classroom," said Chen, "it is my great pleasure and honor to receive this prestigious award." Congratulations Dr. Chen!

Creating an Entrepreneurial Student Spirit through Senior Design

Encouraging Student Teams to Propose Senior-Design Projects

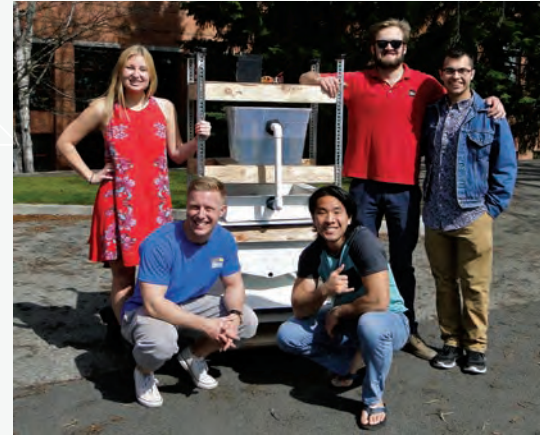
Our senior design efforts continue to expand and evolve, with over 60 student projects this past year! Two years ago, to bring about more student innovation within these projects, the Center for Engineering Design and Entrepreneurship (CEDE) began encouraging students to propose design projects of their own choosing, a concept that has become quite popular among our students. Further, the student proposed projects have become an important addition to the CEDE offerings, creating excitement and providing another way to encourage the entrepreneurial spirit. In 2016-2017, 18 of our projects were based on concepts our students themselves created. These students met the challenge to develop their initiatives into successful projects; here is a snapshot of three of these great student-proposed efforts:

HYBRID STILL

This project team looked to design a water purification system for off-grid health centers in developing countries with a goal of providing an adequate quantity of water for use in such efforts as cleaning medical tools, treating patients, and supporting other needs with relatively contaminants-free water. The team chose an active, hybrid system that harnesses solar energy to both heat water to accelerate evaporation as well as to cool a condensation surface where the clean water is collected for use in the clinic. The team constructed a working prototype which was tested for efficiency under a number of environmental, production rate, and energy demand scenarios. This project team was multi-disciplinary with three mechanical and two electrical engineering students.

DOPPLER RADAR

A team of three mechanical engineering and two electrical engineering students developed a radar system that is small enough to be portable. The goal of this effort was to provide radar resources to small communities or those living in remote areas to identify potentially dangerous storm systems nearby. The GU Doppler RADAR team built a proof of concept/prototype of a small-scale Doppler RADAR system that utilizes a pair of custom-made 2.4 GHz horn antennas, one transmitting and the other receiving, to track solid objects. These antennas can be scaled in a production system to allow the tracking of storm clouds. The system can also be adapted through the addition of a passive parabolic



dish antenna providing the ability to monitor RADAR signals produced by the National Weather Service. A servomotor-controlled mount capable of 360-degree horizontal rotation and up to 90-degree vertical rotation allows automated aiming of the antennas. A micro-processor interprets the resulting signal into a usable display of the surroundings.

PIZZA VR/IA

Five Gonzaga computer science students conceived and created a virtual reality game for the HTC Vive, a virtual reality gaming system. While playing the game, the player wears a headset that shows a 3-D recreation of a pizzeria. Two controllers allow the player to use their hands for a variety of tasks, such as picking up a pizza (with the wooden tool known as a peel) and adding ingredients to the pizza. The player receives randomly generated orders and is awarded game money based on how well they follow instructions and make the pizza: the better the pizza, the more “cash” the operator receives. Purchasing ingredients and managing stock is also part of the game and the player assumes these functions as they have full control of their new business. During Design Exposition Day, this game was a popular attraction where visitors were challenged to try their skills at the pizza business.



“I want to help affect positive change”

Originally from Saratoga, California, Spring had a long-standing interest in computers and a knack for mathematics. She picked up HTML/CSS, PHP and MySQL in her early years and then later, in high school, she learned Java in an intro to computer science class and truly enjoyed the experience. Impressed by the educational excellence Gonzaga offered and the community she experienced both on

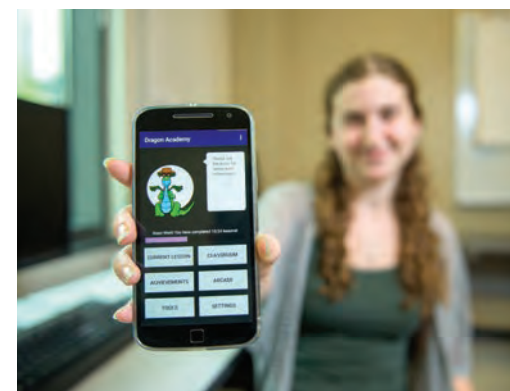
campus and around Spokane, Spring found the computer science program at GU to be a perfect fit.

Gonzaga provided outlets for all of Spring's interests and talents. Her passion for computer science shined in her major and role as a peer tutor. Her aptitude in math was gratified by her minor in mathematics. Her creative instincts were fostered through her involvement with technical theater, working lights, sound, and stage management for performances like Gonzaga's Spring Dance Concert, an experience that also prepared her to volunteer at her church, running the sound board for services.

“I want to help affect positive change,” she said. “I often feel insignificant as merely one person, but I want to have an impact on the world. It doesn't have to be big — I just want to do what I can to make things better or easier for people who need it.”

Spring has a bright future ahead of her as a woman in computing. She received a scholarship to be the first-ever Gonzaga student to attend the Grace Hopper Conference, completed internships with Lockheed Martin and HP Enterprises, and even secured a job with Veritas Technology of Mountain View, California, before graduating this past May. With her time at Gonzaga now behind her, Spring still keeps the future of her beloved school in mind.

“The School of Engineering and Applied Science is working to accommodate a variety of students' interests and skills,” she said, “and there is still so much left to do! We can give students and faculty the resources they need to bring to life what inspires them. Together, we can produce amazing things.”



Imagine the pressure of trying to prepare for the GED exam while you already struggle with traditional classroom learning. As part of their School of Engineering and Applied Science senior capstone project, Gonzaga University computer science recent graduate Kristina Spring ('17) and a group of her peers imagined how they might react to this struggle in an effort to find a solution for local young people who found themselves struggling with this dilemma.

Through a partnership with Spokane's Next Generation Zone, a local organization that helps guide young people toward career success, Spring's capstone project team helped make things easier for those needing assistance preparing to take the GED exam. The team designed an Android app that makes studying for the math portion of the GED easier, appealing specifically to kinesthetic learners (those who learn best by moving and engaging their muscles). Through this app, students are encouraged and motivated to continue by unlocking achievements.

“Working on this project was a really great experience,” said Spring. “We all put in many hours, balancing the technical work of making the app with content development and project management. Our team is really proud of the product we have created and that it can help other people.”

As if that undertaking wasn't enough, Spring has a list of accomplishments that have set her apart and earned her the title of 2017 SEAS Outstanding Student.

SEAS ALUMNI SUCCESS PROFILE



JAMES MOORE ('72)

Several bombings and attempted attacks in the early 1980s moved the U.S. State Department to propose significant security upgrades to United States embassies worldwide. Spokane-based MW Consulting Engineers was chosen for the project in Bogota, Colombia — the first of more than 15 U.S. Embassy projects in the company's 34-year history. Founded in 1984 by Gonzaga University School of Engineering and Applied Science alumnus James Moore ('72) and Robert Welt, MW Consulting Engineers has worked on buildings around the world and

across the GU campus, always maintaining a distinctly Eastern Washington perspective.

"We have projects in a wide range of sectors — higher education, hospitals, libraries, embassies, the convention center," said Moore, whose career in engineering began in Portland, Oregon with a memorable interview. "It was with an engineer who'd been in the business for about 50 years. He told me, 'you'll never be bored in this business.' He was right. I've never been bored a day in my

life. Now that I've been doing this for over 40 years, I can say I wouldn't change anything. There have been no boring days — it's amazing."

Prior to coming to Gonzaga as a student, Moore moved around with his family. He looks back on his Gonzaga experience fondly and is grateful for the support and strong liberal arts foundation he received. To Moore, Gonzaga played an integral role in the success of MW Consulting Engineers both for himself as President of the firm and through the graduates the company has hired.

"In this business," he explained, "you have to be technically proficient and able to interact with people. The world religions, philosophy, speech and other liberal arts classes I had, combined with the excellent technical engineering education, made a real difference. At the end of the day, our business is technically challenging, but it's a people business. My favorite part has been the relationships I've build over the years with all of our clients."

MW Consulting Engineers provides a broad range of services for each project, designing all of the operating systems in a building, including HVAC, power, lighting, plumbing, fire protection and telecommunications. The first project Moore's company took on at GU was Jepson Center, the home of Gonzaga's School of Business Administration. Moore worked closely with professor and dean emeritus Clarence "Bud" Barnes on the project. Since then, MW Consulting Engineers has worked on the Jundt Art Center and Museum, Gonzaga University School of Law, Ralph E. Foley and Helen Higgins Foley Center, McCarthy Athletic Center, Hughes Hall, PACAAR Center for Applied Science and more.

"It's hard to pick a favorite," he said of the many campus projects. "Now, we're involved with the new Jesuit Residence, Woldson Performing Arts Center, the Integrated Science and Engineering building, several dormitories, Tilford center — the list goes on."

Moore further maintains his connection to Gonzaga by serving as a member of the School of Engineering and Applied Science's executive council. Through the council, he interacts with the dean and other engineering alumni to provide useful input about the industry for the benefit of the students.

"Gonzaga engineering students are highly motivated," he said. "There's a passion for what they do. They're wonderful communicators and fine people,

which shows that the qualities and characteristics I experienced in the School are still happening here."

In addition to the time Moore generously volunteers to the council, he gives back in other ways as well, supporting scholarships and programs with gifts.

"It's valuable to have professionals giving back," said Moore. "We have a scholarship, we work on projects, hire graduates, we're part of the intern program — in fact, one of our vice presidents was an intern from Gonzaga who started 28 years ago. It's truly a privilege to be associated with this university in so many ways."



FACULTY PROFILES

MARC BAUMGARDNER & TIMOTHY FITZGERALD

Profiled alongside one another in Gonzaga's 2014-15 School of Engineering and Applied Science year-in-review as new faculty members, mechanical engineering assistant professors Marc Baumgardner, Ph.D., and Timothy Fitzgerald, Ph.D., moved into adjacent offices and labs and quickly formed a relationship that exemplifies the collaborative and supportive nature of the school.

"We met on day one of faculty orientation," said Fitzgerald. "We have complimentary skill sets — I have a background in computational models and measurement techniques, which have been useful in his experiments." "Also, we have similar vision about where we see ourselves and the department going in the future," added Baumgardner.

Fitzgerald's work concentrates on analysis of wings in flight; he is currently performing a series of experiments to capture the deformation of the wings of free-flying insects. Baumgardner's work focuses on combustion, engines, fuels and systems that lead to cleaner burning. As he put it, "we shoot lasers at fire."

Drawn to Gonzaga for the small class sizes, work-life considerations and balance between emphases on teaching and research, both professors fell in love with the many opportunities Spokane provides with respect to family-friendliness and outdoor activities.

"I love to get out and cycle," said Baumgardner.

"He pulled me into that one," admitted Fitzgerald, "and now I commute most days to work by bike." In addition to their common love of the outdoors, Fitzgerald and Baumgardner both agree on what sets Gonzaga's mechanical engineering department apart.

"It's us!" joked Fitzgerald.

"We're nothing if not modest," Baumgardner interjected, with a smile. Fitzgerald continued, "Really, it's the atmosphere in which everyone, from the dean to department chairs, staff and instructors, cares so much about our students and wants to make the program better as engineering as a discipline evolves."

"There is a general cohesiveness in the department," said Baumgardner.



MARC BAUMGARDNER



TIMOTHY FITZGERALD

"Also, we have a big project space for students and are actively trying to grow opportunities for more. I think having a mix of well-defined projects and open-ended projects along with the facilities to accommodate them helps to motivate everyone."

According to Fitzgerald, student-led collaborative experiments, supported by theory and computation are at the heart of a successful engineering education. Baumgardner believes that these opportunities can help Gonzaga's engineering students become more competitive with other programs around the country. Both professors agree that Gonzaga's well-rounded core curriculum, paired with an outstanding technical engineering program, truly makes a difference for students.

"The technical acumen," said Fitzgerald, "and the presence of person that a liberal arts foundation imbibes translate to great people skills later on."

One of Baumgardner's students made an impression with those skills recently while studying abroad in Zambia. The student sent an email from Africa to

Baumgardner, sharing his experience teaching thermodynamics to local children.

“Teaching thermo in Africa!” Baumgardner exclaimed, “That was so heartwarming. I appreciate being able to build rapport with students, whether through the senior capstone projects or the intentional and intensive advising we do here. Watching the progression and then seeing them find jobs and go off to become productive members of society has been rewarding.”

For both professors, the hope is that each and every class leads students to have a stronger ability to handle difficult or complex problems — breaking down every big problem into sequences of smaller problems that can be approached one at a time with confidence. They also emphasize asking questions and understanding that there may not always be answers, viewing these as core elements of Gonzaga’s Jesuit mission.

Baumgardner noted that, “The potential is great to teach engineering in context, helping the world around us — that is what we do.”

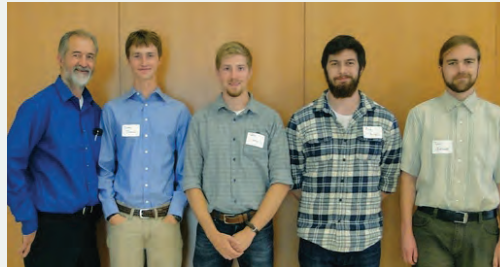
“Our mission provides a wonderful vehicle to give context to the technical minutia in solving problems,” agreed Fitzgerald. “It’s what gets me out of bed in the morning to come to work — being able to work on cool problems that matter and have a real impact. Go forth and set the world on fire — just not literally.”

“For my lab, that actually works,” Baumgardner chuckled, “we burn things every day.”



Gonzaga Mechanical Engineering Students Receive National Award for the Second Year in a Row

The American Society of Mechanical Engineers (ASME) Safety Engineering and Risk Analysis Division (SERAD) awarded a Gonzaga team 'First Place Undergraduate Award in the 2017 Student Safety Innovation Challenge'. The team's paper, authored by four seniors Sean Johnson, John Jozwiak, Cedar Kelly, and Richard Postera, reported on the group's project with the National Institute of Safety and Health (NIOSH) to reduce heat stress on miners. Academic sponsor, Dr. Arthur Miller from NIOSH, defined the goals of the project as removing hot groundwater from underground mines and converting the water's thermal energy to usable power. The student team worked to develop a method to use the resulting energy to both cool the mine and pump hot water away from the mineshaft through the use of a Stirling engine, which takes advantage of the temperature differential between a hot and a cold source. In this case, the hot source was the groundwater in the mine and the cold source was river water that was already being transported into the mine in order to run necessary mining systems. A significant challenge was creating motion with minimal friction, without lubrication and with minimal loss of water pressure. The team designed, manufactured and tested a prototype engine with all of these factors in mind.



In addition to the monetary prize the team will receive, they have been invited to attend the International Mechanical Engineering Congress & Exposition (IMECE) in November 2017, to receive the award at the annual Awards Dinner.

This is second year in a row that a Gonzaga mechanical engineering senior-design team has received this award. The 2015-2016 team developed a filtration project for limiting the amount of respirable silica particulates in the air during frac-sand moving process. NIOSH also sponsored that project.

This is the 25th Anniversary of Gonzaga University's Center for Engineering Design & Entrepreneurship (CEDE). CEDE enhances the design experience for students by organizing and supporting senior projects for engineering and computer science students.

DISTINGUISHED LECTURE SERIES

The Ed and Bunny Renouard Distinguished Lecture Series Enjoys Third Year

This academic year marked the third installment of the Ed and Bunny Renouard Distinguished Lecture Series. Based on a generous donation from the Renouards, the School welcomed three speakers during the past academic year representing interests from multiple fields of engineering and computer science, as well as representatives from both industry and academia.

"In addition to the many technical courses engineering and science majors must take to get their degree, it is also important for our students to learn from successful men and women in industry, business and academia," Ed Renouard said. "The Distinguished Lecture Series allows Gonzaga students to listen to leaders with more experience, and get some practical ideas that will broaden their thinking, and hopefully inspire them."

"The goal of a Jesuit education is to develop the whole person," he continued. "With a wide range of topics over time, the Distinguished Lecture Series can make a contribution to this broader goal. It may also be an opportunity for networking, mentoring, and a possible avenue to future employment after graduation."





Tim Day

Daylight Solutions

Mr. Day provided an overview of his firm (Daylight Solutions, San Diego, California) and the diversity of applications from commercial to high-clearance military pursued by his company. Based on this discussion, he introduced the concept of being extremely entrepreneurial as an engineer. His challenge to the audience was to seek and follow opportunities in one's professional life. His message was extremely well received by our students and faculty.



Dr. Rhea Seddon

Astronaut, Surgeon,
Entrepreneur, and Author

Dr. Seddon gave a lecture in which she shared how she navigated a man's world to accomplish her dream of conducting medical experiments in space, and what it took to become a healthcare leader at the Vanderbilt Medical Group for over a decade. Dr. Seddon's visit was extremely well attended and received, and was also a first for the Renouard series. Specifically, this talk was hosted via a campus-wide collaboration. Beyond the Renouard Distinguished Lecture Series, sponsorship for this talk included contributions from the Women's and Gender Studies, the Academic Vice President, the Faculty Speaker Series, the College of Arts and Sciences, the Comprehensive Leadership Program, the Smith Family Chair in Medicine at the University of Washington Medical School, and the Gonzaga Student Body Association Speakers Fund.



Phil Reinig

Los Alamos Technical Associates (LATA)

Mr. Reinig provided an exceptional overview of a career with far ranging impact. Starting as a government employee, Mr. Reinig joined with a small group of colleagues to start Los Alamos Technical Associates (LATA), a private consulting firm. Mr. Reinig described how, through his career with LATA, he was provided the opportunity to address challenges ranging from work with transportation IT services for the Chicago Metra rail network, to assessment of nuclear challenges in both Chernobyl (in the then Soviet Union) and Three-Mile Island (Pennsylvania), to the recent design of a pocket water filter for use by soldiers.

ABOUT

The SEAS Ed and Bunny Renouard Distinguished Lecture Series provides exceptional opportunities for students to meet professionals from both industry and academia. This includes an open lunch period to meet informally with the speaker and a more formal dinner following the lecture for a limited number of students. The small-group dinner, in particular, provides for purposeful and in-depth conversation of students with professionals from both industry and academia. The lecture is open to students, faculty and staff from all disciplines on the Gonzaga campus. Ed is a 1959 graduate of the Mechanical Engineering Program and retired as Vice President and General Manager of the Boeing Company. He received the Distinguished Alumni Merit Award in 1992. Bunny Renouard is a 1959 graduate of Gonzaga University, where she majored in education, and is a retired speech therapist.



A portrait of the future:

Inside the integrated science and engineering facility

As the planning for the new Integrated Science and Engineering (ISE) Building advances, our vision of a dynamic, interdisciplinary, active learning environment is moving closer to a reality for the Gonzaga campus. Based on the work of design architects, the ISE is taking shape through energetic collaboration and discussion of faculty from across the natural science, engineering, anthropology, and computer-science programs. The design is both innovative and forward thinking in support of future educational and research efforts on the Gonzaga campus.

Looking into possible future interactions enabled by the ISE, we imagine physics and engineering students gathered at a table in active discussion of challenging math problems, while across the hall, a group of science and engineering students might gather equipment for pursuit of an interdisciplinary study of the fish in Lake Arthur and the Spokane River. Further down the hall, biology and chemistry majors might work on laboratory exercises in state-of-the-art laboratories while others, in the project spaces across the hall, put the finishing touches on their Baja racing car.

The computing rooms will be filled with students working on projects from a vast variety of courses from all disciplines on campus. Inside a nearby classroom, teams of students might interact with a professor, offering ideas to apply microelectronics in new medical devices. Throughout the hallway, students and faculty from many academic disciplines will study, talk and share experiences and ideas as they work through their science and engineering courses. This active, innovative learning environment will support not only the development of exceptional student experiences in the sciences and engineering, but will also attract students enrolled in the arts and humanities and other professional degree programs to gain insights into the impact of science and engineering on their individual disciplines.

We look forward both to your support of this effort and, more importantly, to your visit to this exceptional facility once this future has become reality.



MEET OUR NEW FACULTY



Gina Sprint, Ph.D.

Gina Sprint, Ph.D., joins The School of Engineering and Applied Science as an Assistant Professor. Dr. Sprint received her Ph.D. from Washington State University. She is a data scientist investigating data mining for health care applications. She conducts studies to collect data from sensors, such as wearables (e.g. Fitbit) and ambient sensors in smart home environments, to analyze evidence of behavioral changes in individuals. She is excited to join the Computer Science faculty and be part of contributing to the culture at GU that is marked by motivated students, entrepreneurship, volunteering, both locally and globally, and excellent faculty. Dr. Sprint is a Spokane area native and is thrilled to move back.



Meirong Zhang, Ph.D.

The SEAS is very pleased to announce that Meirong Zhang, Ph.D., has joined the Electrical and Computer Engineering Department as an Assistant Professor. Dr. Zhang received her Ph.D. from Washington State University. Her research interests are focused in the realm of Control Systems and include both theory and application of distributed control and estimation, multiple strategies for control systems, and study of multi-agent systems. She is known for her frequent contributions as a reviewer for IEEE. Dr. Zhang is excited to join the vibrant Gonzaga community and support the University's mission to develop the whole person - intellectually, spiritually, culturally, physically, and emotionally. Community service and engaging with students inside and outside the classroom are primary goals. She likes to spend her spare time fixing broken things and cooking traditional Chinese food.



DEGREE AND CERTIFICATION PROGRAMS:

M.S. Transmission and Distribution Engineering
Transmission and Distribution Engineering Graduate Certificate
B.S. Civil Engineering
B.S. Computer Engineering
B.S. Electrical Engineering
B.S. Engineering Management
B.S. Mechanical Engineering
B.S. Computer Science