Fall 2023

University of Idaho
College of Engineering

MECHANICAL ENGINEERING NEWS

ME PROGRAM ENHANCEMENTS

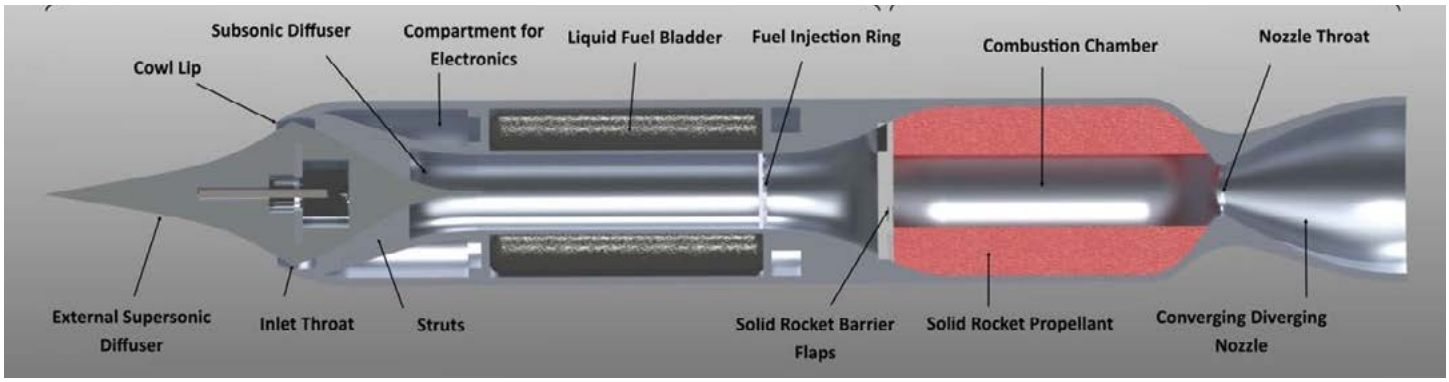
New Engineering Certificates

Aerospace Engineering, Robotics Systems, Robotics Engineering

Aerospace Engineering Certificate

By John Crepeau and Vibhav Durgesh

Many Mechanical Engineering students have expressed interest in the aerospace field. Many of those students have taken jobs at Boeing or at a number of companies in the Spokane/Northern Idaho area. To address this need, planning is underway for an Aerospace Engineering certificate.



Integrated Rocket Ramjet project.

A number of aerospace related courses have been offered almost every year for the past fifteen years, and this current semester is the first time that an Introduction to Aerodynamics course has been offered. In order to earn the certificate, a student must choose to take 12 credits from a list of courses including Turbomachinery, Gas Dynamics, Fundamentals of CFD, Experimental Methods in Fluid Mechanics, Materials Selection and Design, Finite Element Methods and Fatigue and Fracture Mechanics. We hope to be able to offer the certificate for the 2024-25 academic year. *(Continued on next page.)*

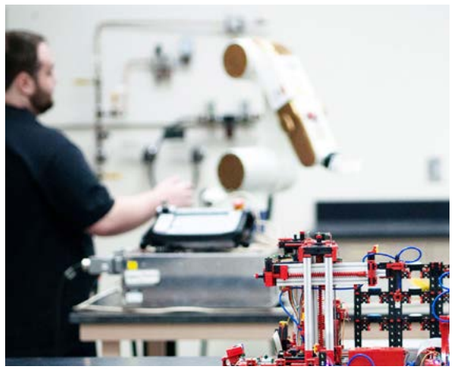
IN THIS EDITION

Aerospace Engineering Certificate *(Continued from page 1.)*

The ME Department has a long history of doing research in aerospace related fields, and senior design projects have been sponsored by NASA, Boeing and other aerospace companies. The department has a wind tunnel which is currently used for teaching and research purposes and has high speed computing capabilities to tackle a number of aerospace-related problems.

Robotics Certificates

By Alexiss Turner



Ph.D. student Jacob Friedberg working on a robotic mini-factory.

Idaho's first industrial robotics certificates are now available through the University of Idaho College of Engineering. New certificates address skillsets needed to fill rising labor shortages in robotics manufacturing.

Undergraduate and graduate certificates are available starting Fall 2023 on all campuses statewide and online through the university's **Center for Intelligent Industrial Robotics**, which integrates new robotics research and training labs across Idaho. The center is a collaboration between the Mechanical Engineering and Computer Science departments.

Students work directly with state-of-the-art mobile and full-size robots used in a variety of applications — from industrial to therapeutic. The center will graduate seven certificate-holding students by the end of Fall 2023.

Watch the videos!

Robotics at University of Idaho Video: youtu.be/GFGjITMpl1k

Mini-Factory Demo Video: youtu.be/5mcstEm-G2Y

"Industrial robotics combines robotics coding and mechanics with artificial intelligence software," said John Shovic, center director and computer science research faculty at U of I Coeur d'Alene. "Students with certification in these areas are prepared to enter the automation engineering workforce of the 21st century, which requires a mix of hardware and software skills. This next generation of skilled professionals will strengthen our global industrial manufacturing capabilities within Idaho and beyond."

By 2030, 2.1 million manufacturing positions are estimated to remain unfilled, according to the Manufacturing Institute. The global robotic manufacturing systems market will double by 2026, Business Wire projects. U of I's certificate programs focus on skillsets needed to fill this gap.

The **Undergraduate Robotics Systems Academic Certificate** (catalog.uidaho.edu/colleges-related-units/engineering/computer-science/robotics-systems-undergraduate-certificate/) offers a unique advanced manufacturing and industrial focus, teaching students about artificial intelligence and the computer science elements of robotics along with traditional mechanical and electrical engineering aspects.

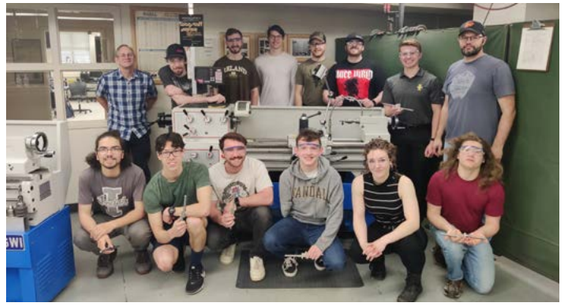
The **Graduate Robotic Engineering Certificate** (catalog.uidaho.edu/colleges-related-units/engineering/computer-science/robotic-engineering-graduate-academic-certificate/) highlights graduate-level artificial intelligence and computer science contributions to robotics.

To learn more about U of I's Center for Intelligent Industrial Robotics and these certificate programs, visit uidaho.edu/engr/programs/robotics.

Machine Shop Training Returns!

By Joel Perry

After several decades without a formal undergraduate shop training program, ME students are once again being introduced to the Mechanical Engineering Machine Shop, this time through a 1-credit, 3-hour per week, hands-on course.



Inaugural year shop training mentors (M) and mentees (clockwise from back-left): Tracy Tussing (M), Paul Martin (M), Paul Sanchirico, Devin Tanak, Josiah Widmayer (M), Luke Presta, Max Nadler, Shane Elmose (M), Trenton Flansburg, Sara Gergen, Colin Haugseth, Ethan Overstreet, Eli Franklin, and Brian Healy.

We all know engineers like building things; they like the challenge of design and the freedom to be creative. Unfortunately, fewer and fewer designers understand how things are made and how their design choices affect those involved in the manufacturing process.

For centuries, the ignorant engineer has been the bane of metal workers and machinists. Engineers are nearly universally despised by experienced machinists who have spent the bulk of their careers fabricating designs produced by engineers who give little or no thought to the manufacturing process.

A few ME faculty and a group of enthusiastic student mentors set out to change this by creating a shop training program that brings students into the ME machine shop earlier in their curriculum in order to learn shop safety and machining practices. The results were everything we had hoped, and not just because the student mentors were passionate, but because the four mentors had immense prior experience in machining practices from a combination of earned machining degrees and extensive industry experience.

The inaugural semester was Spring of 2022, in the midst of a search for a new machine shop manager and uncertainty over whether the position would be filled in time for class, or perhaps filled at all (journeyman machinists are a dying breed, especially those with an aptitude for academic settings). Fortunately, the position was filled a few weeks into the semester, and with the shop training program well underway.

The goal of the new program is to build knowledge and awareness in the undergraduate population around machine shop basics including shop safety and machining processes. In fewer words, the goal is to reduce ignorance and increase empathy (for machinists). Students in the program practice shop skills including: general shop safety, machine safety, creating machine plans, machine setup, mill and lathe operations, locating features, speeds and feeds, interpreting drawing, and part inspection. The course builds concepts iteratively through practice on scrap metal, practice parts, and then a 6-week final project. The first semester final project was a custom tap handle with CNC-engraved Idaho "I" and other custom logos.

With shop manager Brian Petty now at the helm, the program is in good hands and will continue its mission to reduce ignorance and increase empathy in repair of the machinist/engineer relationship.

Acknowledgements: The author would like to thank the talented crew of student mentors/machinists (Shane Elmose, Josiah Widmayer, Tracy Tussing, and Paul Martin) for their dedication in sharing knowledge with fellow students. Without them, this program may not have been restarted. Also to retired faculty Edwin Odom, who helped get the program off the ground through planning and as part-time interim shop supervisor during shop training sessions.

Interdisciplinary Engineering Students Design and Build a Novel Flying Wing

By Matthew Swenson and Vibhav Durgesh

Through informal discussions with NASA, we have discovered that NASA has ~1500 patented technologies that have potential for high societal impact but are not directly being utilized by NASA. As a result of these unused patents, NASA has launched the Transfer to University (T2U) program to serve as a conduit for transfer of these technologies directly to universities. This program is designed to facilitate product development and commercialization opportunities via licensing of the technology if a product market is found to exist.

Rendering of an UAV with a 12 foot wingspan designed for fabrication and flight to demonstrate the effectiveness of the Prandtl-D wing

Over a year ago, we identified two separate NASA patented technologies that are closely aligned with the research interests of several of our faculty. Initially, we were able to successfully work with NASA to gain no-cost research licenses for the technology, enabling us to proceed with development. Then, through a generous grant from the NASA Idaho Space Grant Consortium (ISGC), we created two parallel interdisciplinary capstone design projects this past year, and NASA connected our students directly with experts that previously worked on the original patents.

The objective of one of these projects has been to pursue "Demonstration of a Prandtl-D Wing Aircraft." The Prandtl-D Wing is a novel aircraft wing design that does not require a vertical tail to stabilize the aircraft while making a turn and is expected to achieve ~12% reduction in drag, resulting in potentially game-changing improvements in energy efficiency. To accomplish this demonstration, the team initially conducted simulation analysis of the wing design to verify expected performance and conceptually designed an unmanned aerial vehicle (UAV) shown in Figure A. The team then fabricated their prototype design (the largest Prandtl-D wing ever constructed) and conducted multiple test flights outside Moscow this past spring as illustrated in Figure B.

Demonstration of the Prandtl-D wing in flight.

This past summer, the flying wing prototype was also featured at the I-90 Aerospace+ Corridor Conference and Expo in Coeur d'Alene, ID.

Idaho Forest Group Scholarships

We appreciate the continuing and generous support of Idaho Forest Group (IFG), LLC. In the past, they have donated to the Mechanical Engineering and Computer Science Departments for the development of educational activities focused on industrial robotics In Moscow and Coeur d'Alene.

They continue to provide IFG scholarships to students. **This year's Mechanical Engineering scholarship recipients are Levi Bailey, Isaac Corgatelli, Jason Franklin, Senami Hodonu, and James Setters.**

Frank Wesley Childs IV Memorial Scholarships Awarded

My goal is to participate in and develop the next generation of rehabilitation robotics. I aim to use my education and personal experiences to assist in patient recovery. I envision myself working with designing haptic feedback systems to ensure accurate, comfortable, and streamlined operations during early recovery.

Devin Tanak

I study engineering because I believe that this field offers a unique opportunity to make a positive impact on the world. I am driven to make a difference and contribute to a more sustainable and prosperous future.

Samuel Mbah

ME Advisory Board Scholarships Awarded

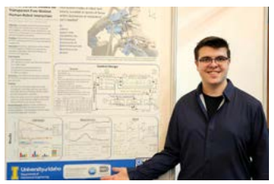
My interests in Mechanical Engineering include innovation, design, sustainability, systems engineering, and leadership. More specifically, I am interested in the Aerospace industry and manufacturing, and working to better the future of Space Exploration and research.

Kathy Ruiz

I am interested in the manufacturing and energy generation industries. I'm determined to become a creator of things that improve people's lives by applying scientific and engineering principles.

Josiah Widmayer

Christopher Bitikofer



From Ph.D. to Postdoc: Embracing the Journey of Learning and Impact

How are you not tired of school? A longtime friend asked me this question recently while we were catching up over coffee this summer. Of course, I have felt fatigued. There have been challenging experiences, but I'm energized by working through them, proving that I can write a dissertation, build an exoskeleton robot, and conduct research that promises to help people recover from stroke. Beyond that, I thrive in the university setting, where students are eager to learn, people are determined to push scientific boundaries, and I can help others in their learning journeys.

Completing the PhD Journey and Venturing into a New Chapter

This summer, I completed my Ph.D., graduated, and joined the University of Idaho as a Postdoctoral researcher. This is an exciting milestone for me and the Department of Mechanical Engineering as we're expanding our research presence, which is critical to the University's larger goal of becoming an R1, high-research activity institution. I'll continue advancing the BLUE SABINO project in my new role, while sharing our work with the broader scientific community.

Becoming a Scientist and Educator

In my postdoctoral role, I continue to build my engineering skills and mature as a scientist. I aspire to leverage my Ph.D. research to make a meaningful impact, bringing our dream of clinically applied rehabilitative robotics closer to reality.

I am excited to continue growing as an educator. As a graduate student, I had the privilege of teaching Introduction to Computer-aided Design Methods, ME 301. I look forward to teaching Solid Modeling, Simulation, and Manufacturing Capstone, ME 490, this Spring semester.

The transition from Ph.D. student to postdoctoral researcher signifies not just a continuation of my academic journey but also an opportunity for me to inspire and impact others. To belatedly answer my friend's question, I am not tired because my work is exciting, challenging, and purposeful. I am grateful that I get to do this job and am excited to continue at UI.

GRADUATE STUDENT NEWS

Kaitlin Tabaracci

This year I was awarded a USDA's NIFA predoctoral fellowship. During the duration of the award, I will address several gaps in understanding stalk lodging.

Stalk lodging (permanent displacement of plants from their vertical orientation) severely reduces agronomic yields of several vital crop species including maize. Yield losses due to stalk lodging are estimated to range from 5-20% annually. Three fundamental inadequacies prevent the scientific community from fully addressing the problem of stalk lodging. First, engineers and metrology experts have not adequately communicated best practices for acquiring biomechanical phenotypes to plant science researchers. Second, it's unclear which of the many hundreds of intermediate component phenotypes that contribute to stalk lodging are ultimately the most predictive of lodging resistance. Third, many economically viable (i.e., low cost and high throughput) devices for quantifying phenotypes related to stalk lodging have yet to be developed. My work will directly address each of these gaps in research infrastructure. It will include:

- A "Handbook of Plant Biomechanics" that will make guidelines for acquiring biomechanical measurements of plants accessible for plant scientists who do not have a background in metrology or engineering. Making testing procedures and commonly encountered pitfalls more available to the plant science community will enable increased accuracy, reproducibility, and meta-analysis of biomechanical plant data in the future.
- A statistical model will be developed that will enable us to determine which plant traits most efficiently predict stalk bending strength and stalk lodging resistance.
- An electrical-mechanical device will be improved that will measure the stiffness of a stalk along the length, which is highly predictive of stalk bending strength and stalk integrity. These improvements include improving device ergonomics with the end goal of one hand use, reduction in size and weight, increased safety stops to prevent pinching of the user's hand or finger, redesign of electronics package to increase reliability, quality control, and repeatability of measurements etc.

This semester I have had the pleasure of teaching ME 223, our sophomore level design course. I took this class when I was an undergraduate here, I shadowed it in the spring and now I get to teach it. I think this allows me to bring a unique perspective to the classroom. It has been great engaging with students, and I am looking forward to the electrical-mechanical projects we will see from this group at MINI-EXPO in December!

COE AWARDS SPRING 2023

Drs. Edwin & Susan Odom Outstanding Student in ME Awards

Nicolas Burrows

From a young age, Nicolas was fascinated with engineering due to his family's aviation background. He earned his private pilot license and built his own aircraft.

Shane Elmose

Shane has always been fascinated by mechanical part design and manufacturing, which fueled his passion for machine technology and ultimately led him to engineering.

Outstanding Senior Awards

Kyle Christopher

After a decade working in natural resources, Kyle decided to pursue a degree in ME.

Grant Lucke

Grant found manufacturing and design captured his interest the most during his time at UI.

Ty Sand

Following his B.S. degree, Ty is now pursuing a M.S. degree in Mechanical Engineering at UI.

COE AWARDS SPRING 2023

Outstanding Graduate Student Awards

Brandon Hilliard

After completing his Ph.D., Brandon hopes to make a positive impact on the world, developing renewable energy resources or improving medical treatments for diseases.

Jackson Stump

Jackson is pursuing a M.S. degree, continuing his undergraduate research designing/developing a bi-lateral upper limb exoskeleton for research and assessment of stroke survivors.

Faculty Awards

DR. DANIEL ROBERTSON RECEIVES OUTSTANDING FACULTY AWARD

Dr. Robertson's teaching and research efforts are focused on using engineering principles to sustainably provide food, fuel, and fiber for the world's growing population.

DR. MATTHEW SWENSON RECEIVES DEAN LARRY & NICOLE STAUFFER EARLY CAREER FACULTY AWARD

Dr. Swenson has extensive research experience on the effects of irradiation on oxide dispersion strengthened and other nano-featured alloys, which have applications in nuclear reactors.

FACULTY AND STAFF NEWS

Faculty Promoted to Associate Professor with Tenure

Dr. Vibhav Durgesh

Dr. Durgesh teaches experimental methods in fluids and thermal sciences, thermal systems design, and senior capstone design courses. He studies viscous flows, turbulence, and aerodynamics and has worked on fluid-structure interactions (FSI), biofluids, fluid flow in porous media, and optical diagnostic methods for flow visualization. His research is predominantly experimental in nature, but he has also worked on analytical modeling. Dr. Durgesh has spearheaded the establishment of the Aerospace Certificate in the ME Department and serves as the Chair of the department's Curriculum Committee.

Dr. Michael Maughan

Dr. Maughan delivers sophomore and senior design, lean manufacturing, mechanics of materials, design for manufacturing, and advanced CAD with SOLIDWORKS courses. He researches materials characterization via testing and microstructure analysis, manufacturing methods such as wire-arc additive manufacturing and laser wire metallic depositions, and additive manufacturing for bio-based composites. One current research project involves 3D printing of large structures made of wood composites for building houses and other dwellings. Dr. Maughan has studied engineering education, evaluating the evolution of student design skills from freshman to senior year.

Dr. Matthew Swenson

Dr. Swenson's teaching includes the senior capstone design, materials selection and design, and machine design. He is the Director of the Capstone Design Program, where he organizes the yearly Design EXPO. He is a member of the Co-op committee, helping engineering students procure jobs with companies while enrolled at the University of Idaho. Dr. Swenson's research areas are nuclear materials, advanced manufacturing and characterization, applied design and entrepreneurship, and engineering pedagogy. He is an expert on irradiation effects on microstructure and mechanical properties for ferritic-martensitic steels and oxide dispersion-strengthened alloys.

Gabriel Potirniche Named Associate Dean of the College of Engineering

Dr. Gabriel Potirniche has been appointed Associate Dean of the College of Engineering. He is a professor of mechanical engineering, and between 2020 and 2023 was the ME Department chair.

Dr. Potirniche received his doctorate from Mississippi State University in 2003 and joined the University of Idaho in 2007 as an assistant professor. He teaches engineering mechanics courses on several topics at both the undergraduate and graduate levels. His research expertise is developing mathematical and computational models of material behaviors, such as elasticity, plasticity, creep, damage, fatigue, and fracture. He also developed models for other physical phenomena, such as high-rate mechanical impacts and thermoelectricity.

Dr. Potirniche is a licensed professional engineer in Idaho and a member of the American Society of Mechanical Engineers. He has published over 70 book chapters and technical papers in journals and conference proceedings. He and his students have presented at national and international conferences. His interdisciplinary research has been funded by the Department of Energy, Department of Defense, National Science Foundation, Micron Technology, Murdock Charitable Trust, Alcoa Technical Center, and II-VI Foundation.

As the new associate dean of the college, Dr. Potirniche will focus primarily on academic affairs. He will seek to develop new educational initiatives and participate in recruitment and retention efforts. He also plans to promote research activities, participate in outreach initiatives, and foster connections with external stakeholders. Additionally, he will work alongside college faculty and staff in building multidisciplinary collaborations across the university campus and with other institutions.

Dr. Potirniche sees excellent opportunities ahead for our college. Emerging areas like advanced modeling and simulations, artificial intelligence, virtual reality, and augmented reality are poised to become increasingly relevant. Computer-based tools relying on advanced programming will become more prevalent in engineering practice. Leveraging these engineering tools for tasks like design, simulation, or analysis will profoundly impact the efficiency and effectiveness of engineers' work.

One of the challenges lies in implementing these advanced computational tools in engineering applications and creating an environment where students can reliably and responsibly use them to improve their training. Dr. Potirniche looks forward to participating in such initiatives, which have the potential to significantly enhance teaching and research activities in fields like manufacturing, energy systems, automation, robotics, and others.

Expanding Biomedical Research Efforts in the ME Department

By Gianluca Blois

A new research project titled "Physics-informed AI multifidelity framework for in vivo microcirculation hemodynamics", supported by INBRE-RAIN, will be starting this summer. The study will expand the biomedical research efforts in the department. Gianluca Blois, a faculty member in the Department of Mechanical Engineering will be developing, in collaboration with a colleague at Montana State, Dr. Yaofa Li, a novel AI-aided approach to quantify micro-scale hemodynamics using newly available low-cost ultrasound probes.

Compromised microcirculation hemodynamics are believed to be responsible for a range of vascular diseases. For example, abnormally low and high wall shear stresses are highly correlated with endothelial-cell dysfunction resulting in vascular inflammation and lesions such as the formation of atherosclerotic plaques and the rupture of microaneurysms. Detection of the transition from physiological to pathological state is paramount to early intervention. Ultrasound in combination with image

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based velocimetry approaches have been used to measure the in vivo blood flow. An example by Leow et al (2015) is shown in Figure 1.

The goal of this research is to develop a framework capable to infer key hemodynamic parameters associated with pathophysiology, such as velocity profiles, pressure, and wall shear stress from next-generation affordable ultrasound devices through super-resolution algorithms based on physics-informed convolutional neural networks (CNNs). To achieve this objective, PI Blois and co-PI Li will produce appropriately large training datasets containing in vitro hemodynamics from two velocimetry techniques: 1) high-fidelity (HF) laser-based (micro-PIV), and 2) low-fidelity (LF) sound-based and use them to train double-image super-resolution (DISR) deep neural networks to enhance the hemodynamic assessment currently achievable through affordable CMUT-based ultrasound probes.

If successful, this research will demonstrate new paradigms for affordable, high-resolution diagnosis and will greatly advance our ability to detect early stages of cardiovascular anomalies by synergistically integrating the underlying physics with sequential images from microfluidics experiments and machine learning.

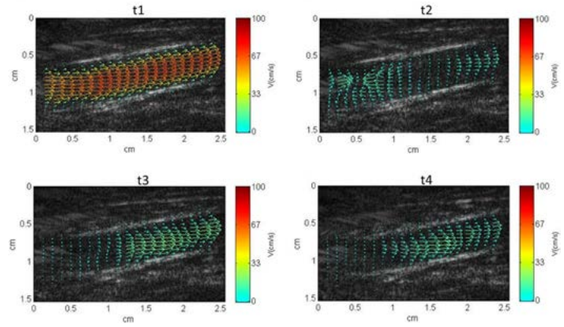


Figure 1. Quantitative visualization of the flow patterns within a rabbit aorta. From Leow et al 2015.

National Center for Adaptive Neurotechnologies Post-Doc

By Sebastian Rueda Para

In the summer of 2017, I made a life-changing move to Moscow, Idaho. I had just been accepted to the doctoral program in electrical engineering. As I settled in, both Idaho and the University surprised me with their captivating landscapes and a vibrant academic environment, that offered the opportunity to engage in cutting-edge research.

Joining the Assistive Robotics Lab, I became an integral part of an interdisciplinary team (guided by Dr. Eric Wolbrecht and Dr. Joel Perry) dedicated to crafting remarkable robotic devices tailored to assist individuals with various conditions.

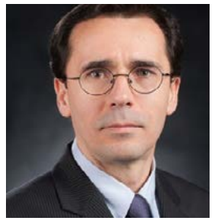
While my background diverged from the majority, who were Mechanical Engineers, I found unwavering support for my work, continuous appreciation for my contributions, and a collaborative atmosphere that encouraged meaningful discussions and professional growth. This experience not only fortified my technical skills but also expanded my perspective on the realms of research and academia, particularly in the field of neurosciences.

Over my years at the University of Idaho, I fostered scientific collaborations with institutions nationwide, further fueling my passion for research. This platform allowed me to delve into fields I had long been curious about but also crucially facilitated exploration into entirely new areas.

With the completion of my Ph.D., my dream of becoming a scientist was realized, marking the commencement of my personal academic odyssey equipped with the tools to conduct high-level research. Through a fruitful lab collaboration, I found the perfect next step in my career.

Presently, I am a post-doctoral researcher at the National Center for Adaptive Neurotechnologies (NCAN) in Albany, New York. Here, I continue to work with robotic devices, including those pioneered in the Assistive Robotics lab, to enhance neurorehabilitation and gain deeper insights into the intricacies of human sensation and its correlation with motor deficits in conditions such as stroke.

LETTER FROM THE OUTGOING CHAIR



Dr. Gabriel Potirniche, Former ME Department Chair

I feel fortunate to have served as the chair of the ME department from 2020 to 2023. During this period, I dedicated my best efforts to enable the department's growth and uphold its culture and practices. When I joined the department in 2007 as an assistant professor, I was immediately impressed by the dedication and professionalism of ME faculty and staff members. The guiding principles of our department have consistently centered on unwavering dedication to student success, commitment to impactful research, and meaningful involvement in outreach to external stakeholders. My transition into the role of chair was significantly eased by the guidance and wisdom imparted by my predecessor, Dr. Steve Beyerlein. His insights were instrumental in allowing me to grasp the multifaceted aspects affecting the department's functionality and success. One of the most gratifying aspects of my tenure has been working with our highly dedicated ME faculty and staff members to initiate projects that will positively impact our programs well into the future. I also greatly enjoyed interacting daily with our talented and hard-working students.

I assumed the department chair role during the height of the COVID-19 pandemic. That was undoubtedly a challenging time, particularly for our students. The ME department quickly adopted the university policies and guidelines aimed at effectively managing the crisis and ensuring the safety of our students and staff, while maintaining a good quality of educational and scholarly activities. Through diligent efforts, our department successfully implemented safety rules designed to cope with the uncertainties of the unfolding pandemic and minimize the adverse impact on our students' education.

Over the past three years, our department has implemented several notable revisions to its curriculum. We adopted a new introductory course in engineering for first-year students. This allowed our students to get exposed to many engineering disciplines and acquire career development skills. The department recently decided to supplement this introductory offering with hands-on learning experiences in design and manufacturing. Recognizing the increasing importance of technology-oriented training for our students, we implemented a sophomore-level programming course.

Furthermore, as we phased out the technical writing course from our curriculum to make room for the programming class, we dedicated nearly a year to extensive discussions on developing a comprehensive plan for embedding technical writing skills across more than a dozen courses within our undergraduate program. Our faculty invested numerous hours in formulating this plan, which will likely significantly enhance our students' proficiency in technical writing.

We introduced several senior undergraduate and graduate-level technical electives on aerospace and robotics. Through the generous support of several industrial partners represented in our department's advisory board, we established a laboratory dedicated to industrial robotics in collaboration with the Computer Science Department. The effects of this initiative are already apparent, as students now receive advanced training in programming logic controllers (PLC), robotics, and automation. These skills are proving beneficial in specific senior design projects and research activities. I anticipate that the department will experience continued growth in these areas and others that have constituted the traditional focus of our faculty.

Another fulfilling aspect of my activities as chair has been engaging with our advisory board members and other department stakeholders. Their foresight, generosity, and willingness to support our programs have been a great source of inspiration and a motivation for me to work harder in implementing some of their visionary outlooks for our department. Additionally, I am grateful to the many donors who have contributed financially or in-kind. Their support helped us grow our student scholarship fund and the ME infrastructure facilities. Their invaluable contributions have significantly enriched the learning opportunities for our students.

As Dr. Eric Wolbrecht assumes the role of the new chair, I have every confidence that the department is in good hands. I wish him the best of luck in leading our department toward an even brighter future!

LETTER FROM THE INCOMING CHAIR

Dr. Eric Wolbrecht Department Chair and the Dean and Cindy Haagenson Mechanical Engineering Endowed Professor

This fall, I began my term as chair of the Mechanical Engineering Department. The previous chair, Dr. Gabriel Potirniche, now serves the College of Engineering as the associate dean. The ME department is indebted to Professor Potirniche for his excellent stewardship as department chair over the last 3 years and I am personally thankful for his advice and guidance during the transition. I am also grateful for the advice of Dr. Crepeau (former ME chair and College of Engineering interim dean), Dr. Beyerlein (former ME chair), and Dr. Stauffer (former College of Engineering dean). Their experience, wisdom, and passion for engineering education are invaluable resources.

When I joined the University of Idaho in 2007, I was impressed by the quality of the Mechanical Engineering Department. I joined a group of talented faculty who excelled as both instructors and researchers and benefitted from their generous mentoring and support. I also experienced our outstanding administrative staff and witnessed their compassionate support of our students while keeping our department operating smoothly. Although some of the names have changed (and some haven't!), I remain in awe of our department's faculty and staff. We've hired incredible faculty over the years who are committed to high-quality engineering education and world-class research. Their passion is matched only by our staff (administrators Becky Colpaert and Debbie Edwards and machine shop manager Brian Petty) who are dedicated to the mission of the department. Special thanks to Becky and Debbie and our college leadership and finance teams for helping me learn what I don't know about the inner workings of our department and college. I have more to learn from the department's faculty and staff than they do from me, and I am honored to serve them and the department in this new role.

One of the more exciting aspects of the chair position is the expanded opportunities for interaction with our students, alumni, and industrial partners. It is a great privilege to serve and mentor our students and support their endeavors as they develop into outstanding engineers; our graduates are the main indicator of the quality of our program. I'm also looking forward to engaging with alumni and our industrial partners in frequent and meaningful ways, including through our biannual Mechanical Engineering Advisory Board meetings.

Although my time for research will be reduced as chair, my passion for helping people through engineering innovation remains. The collaborative research conducted in our department impacts a broad and diverse range of fields and impacts local, regional, and global stakeholders. In turn, our faculty stays up to date on the state of the art in their respective fields to the benefit of our students. Supporting our faculty in their research endeavors and recognizing them for their contributions to society is a top priority for the department.

I fully expect my vision for the department to evolve as I receive feedback from all stakeholders, including students, alumni, faculty, staff, and industry partners. However, I believe the core principles of the Mechanical Engineering Department are strong and I am committed to maintaining the high quality of our programs while seeking impactful changes to grow undergraduate and graduate enrollment and facilitate and streamline high-quality research and creative endeavors. We have several exciting initiatives in the works, including certificate offerings (e.g. aerospace) and a fundraising campaign (watch for it!) to reinvigorate our experiential learning infrastructure by updating our machine shop, prototyping equipment, and instructional laboratories.

If you are reading this article, you are likely one of the many supporters of our department, college, and university. Thank you for all that you have done and continue to do to help us! I look forward to engaging with as many of you as possible in the future. Please don't hesitate to give me a call (208-885-0348), send me an email (ewolbrec@uidaho.edu), or message me on LinkedIn at any time. I'd love to hear from you and discuss the present and future of the Mechanical Engineering Department at the University of Idaho!

Best Regards,
Eric Wolbrecht

In Memory of Elaine Queener

Ultimately, it's about helping people. No one understood this more than Elaine Queener, who served the Mechanical Engineering Department from 2003 to 2017 as an administrative assistant. She also worked in the Music Department from 1972 to 1981.

Elaine recently passed away with her family at her side following complications from a biking accident.

During her tenure, she helped countless students along their collegiate journey. Her support went beyond administration, and it was clear that she cared about students as individuals and wanted to see them succeed. The impact of Elaine's presence in the department was not limited to students but extended to all staff and faculty within the department, college, and university who had the privilege of working with her.

The best way to understand her legacy is to hear it from those who were fortunate enough to cross paths with her during her time at UI.

"Elaine was a wonderful human being. I greatly enjoyed working with her on graduate program topics and attending concerts organized by the Lionel Hampton School of Music with her and her husband, Gerry." ~Gabriel Potirniche, COE Associate Dean and former ME Department Chair

"Elaine made the world a better place. I was lucky to have known her and worked with her." ~Don Elger, Emeritus ME Faculty

"Elaine made a big contribution to the ME Department, students, and the community at large." ~Mike Anderson, Emeritus ME Faculty

"Elaine had a sincerity in her attentive presence that made you feel like the most important person in the world. That constant gift gave students and faculty alike the confidence to be their best and to know that what they do matters...that they matter. She will be greatly missed." ~Joel Perry, ME faculty

"I had the honor and privilege of working alongside Elaine in the Mechanical Engineering Office for over 10 years. She was a wonderful mentor, role model and friend to me and so many others whose lives she touched. Her kind heart and gentle spirit will be deeply missed. " ~Becky Colpaert, ME Administrative Assistant

"I have nothing but fond memories of Elaine from my time as a grad student. She always went above and beyond to help, including introducing my husband and me to her husband. He worked at Spence Hardware at the time, and we had questions on some project or another we were working on. She will be greatly missed!" ~Amanda Battles, BSME 2011, MSME 2013.

"Elaine was one of the kindest people I know. I am extremely thankful for her endless support and care while I was a student at the university. I, along with countless others, will miss her dearly."~Sally Mei, ME graduate, R&D Lead Mechanical Engineer, Schweitzer Engineering Laboratories, Inc.

The Mechanical Engineering Department is grateful for Elaine's dedicated service and is saddened by her passing. Her husband, Gerry Queener, asks that should you wish to make a remembrance in her name, please donate to the *Elaine Queener Memorial Piano Scholarship* at go.uidaho.edu/queener-scholarship or Troy Lutheran Church in Troy, Idaho.

ENGINEERING DESIGN EXPO, April 26, 2024, uidaho.edu/engr/events/expo

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