



University of Idaho
College of Engineering

MECHANICAL ENGINEERING NEWS

CLEAN SNOWMOBILE TEAM

Idaho Clean Snowmobile Team Wins

*First Place in Acceleration and Value-Benefit Presentation;
Second Place Overall - Society of Automotive Engineers Clean
Snowmobile Challenge*

By Karen DenBraven, Kamal Kumar & Student Team Members



*UI sled at the objective handling event.
Photo credit: Daniel Nehmer.*

The University of Idaho's Clean Snowmobile Team returned with a vengeance in 2023! The team achieved first place in Acceleration and Value-Benefit Presentation; and an overall second place at the Society of Automotive Engineers (SAE) Clean Snowmobile Challenge.

The team also continued its long record of exemplary sportsmanship, as the UI rider for the 100-mile endurance event extinguished a fire on the Michigan Tech snowmobile during the event, saving the snowmobile and preventing serious injury to the other rider!

Those of you who have followed the team over the years will recall a similar event in 2007 when the UI rider extinguished a fire on the University of Wisconsin-Platteville sled.



*2007 Competition.
Photo credit: Daniel Nehmer.*

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CLEAN SNOWMOBILE TEAM

The SAE Clean Snowmobile Challenge began as a way to address the environmental concerns of operating snowmobiles in sensitive winter environments such as Yellowstone National Park.

The first Challenge was held in Jackson, Wyoming in 2000, organized with the cooperation of SAE alumni, the snowmobile outfitters and riders in the area, the National Park Service, and the Montana Department of Environmental Quality.

The UI CSC team first competed in 2001, achieving overall first place in 2002 and 2003 with a snowmobile powered by a modified four-stroke 750cc BMW motorcycle engine. The team then decided to take on a more difficult challenge: making a two-stroke engine clean and quiet. This goal was achieved in 2007 when the team once again won first place with its UI designed and manufactured direct injected (DI) two-stroke engine! That year UI swept the competition with nine total first place awards, including Best Performance, Best Fuel Economy, Best Design and Most Sportsmanlike for the “firefighting” effort mentioned above. Since then, the team has remained one of the most inventive, often placing in the top three. More importantly, many of the team’s participants have been hired by vehicle manufacturers and have become leaders in the industry. Several have started their own companies. The number of total trophies and awards the team has received is now well over 100, and Idaho is always seen as one of the teams to beat in competition.



Teams participating in the 2023 Society of Automotive Engineers Clean Snowmobile Challenge. Photo credit: Daniel Nehmer.

In March 2020, the competition was cut short due to COVID. The longtime venue at Michigan Tech University shut down, sending all teams home early, including the University of Idaho. When the competition reconvened in person in 2022, it had a new venue at snowmobiling’s World Championship Derby Complex in Eagle River, Wisconsin. The purpose is still to modify a snowmobile to make it clean, quiet, and more fuel efficient, but there is now more emphasis on performance aspects, such as acceleration and handling. The UI team has always tried to maintain the performance of its sled while holding true to the purpose of the competition.

The team focuses its project efforts on the technological improvements of the 2-stroke engine, which is a rare engine to see at competition due to most of the teams being from trail riding areas around the Midwest that use 4-stroke engines for their snowmobiles. The main reason the team is motivated to be so successful is because they are the only university team representing Mountainous Pacific Northwest Snowmobiling, with the closest team to Idaho attending the competition this year being North Dakota State University. Because of that, the Idaho Clean Snowmobile Team draws students and funding from all surrounding states to have the opportunity to develop a snowmobile to compete against universities from all over the United States and Canada. The 2007 competition was the last year the University of Idaho won first place at the SAE Clean Snowmobile Challenge. In 2022 they took third place and this year they took second place. Team members are set on winning in 2024 and showing that the 2-stroke engine still has a lot more life in it when it comes to the future of snowmobiling.

The big projects for the team this year were the testing of their dual-substrate catalyst exhaust system and sound reduction research. A 2-stroke engine runs louder and with higher emissions than their 4-stroke counterpart, so the team sees if they can lower those negative attributes of the engine while keeping its superior lightweight power. It will be the key to winning the competition. Removing snowmobile noise with sound-reducing materials such as foam, spray-on or painted material, and silicon are all things the team has done and is currently researching. The biggest innovation attributed to the second place finish this year was using a belt drive conversion kit from TKI CNC to reduce the weight and noise of the snowmobile drive-train. From that success the team will do more research on lowering drive-train noise, as well as their current engine sound research in hopes it will bring an improved placement at the 2024 competition.

New 3D Imaging and Printing Course

By Tao Xing



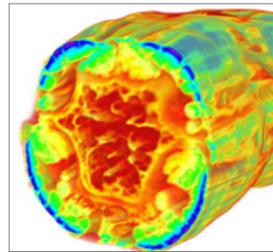
3D-printed King Spud trophy.

The newly established University of Idaho 3D Imaging and Printing Laboratory (<https://www.uidaho.edu/3dip>) located in IRIC 221 has attracted users for their research and educational activities, including students' interdisciplinary capstone design teams, Associated Students University of Idaho (ASUI), Department of Mechanical Engineering,

Department of Chemical & Biological Engineering, Department of Physics, and Department of Forest, Rangeland, and Fire Sciences.

To help undergraduate and graduate students to learn the fundamentals of 3D imaging and 3D printing, Dr. Tao Xing and his Ph.D. student, Anas Nawafleh, are developing a new 1-credit course with the title "ME 404 ST: 3D Imaging and Printing," which will be offered for the 1st time in Fall 2023. The course has lectures and hands-on laboratories.

The lectures will cover what 3D Imaging & Printing are, features of the 3D Printer (Stratasys J850) and 3D scanner (SkyScan 1275), safety, cleaning, and calibration procedures, 3D.Suite software for 3D imaging (CTVox for 3D visualization, CTVol for realistic surface rendering visualization, CTAn for Morphological analysis, and NRecon for reconstruction and post-processing of the raw images), and GrabCAD software for 3D printing.



3D image of a rat tail.

Two different types of hands-on laboratories will complement the lectures. 3D printing laboratories focus on how to print rigid and flexible models students design and how to post-process the printed objects to meet their needs. 3D imaging laboratories focus on how to set up the right parameters to scan different

materials (metal, wood, and biological tissue) and how to reconstruct the raw images for the best visualization result.

ENGR 123 Mini-Project Summary

By Dan Cordon and Steve Beyerlein



In Fall 2022 a new First-Year Engineering (ENGR 123) course was implemented. This course is open to all engineering majors and any students with a curiosity about engineering (see [Fall 2022 newsletter](#)). One component of this course is an open-ended design project where teams of 3-6 students worked with a local client on a compelling engineering problem. There were 17 projects for the students to choose from. Some of the project descriptions included:

- ◇ Creating Hands-On Activities to use with STEM Outreach to K-12 Students
- ◇ Exploring an EV Semi Truck for the UI Steam Plant
- ◇ Orientation Effects on Material Properties of 3D-printed Parts
- ◇ Pedestrian Safety at Intersection of Stadium Dr. and Highway 8
- ◇ Campus Water Dispenser Data Collection
- ◇ Landscape Design for Water Reduction at Engineering Physics Building

On November 3rd all four sections of ENGR 123 held a design snapshot day where they presented in-progress findings on their design project in an open poster session in the Capstone Design Suite. This lively session was well-attended by students, faculty, staff, and Advisory Board members from several engineering disciplines. Discussions were still ongoing when we had to clear the room three hours later.

These design projects started about the midpoint of the semester and students had six weeks to work on them. The snapshot event occurred 3 weeks after their project started just as they were finishing up their project learning phase. Teams collected/analyzed data and reported findings/results to their client. Short engineering reports were also submitted as part of the course deliverables. Based on end-of-semester interviews and surveys of the students this was one of the high points of their engineering experience so far.

New PrintWorks 3D Printing Studio

Students Benefit From New Printing Space

By Joel Perry

Last summer, our 3D prototyping lab relocated from a multi-purpose room across from the machine shop to a new home upstairs dedicated to 3D printing. Located in the southwest corner of ME faculty offices (Gauss-Johnson 234F), this new space houses eight 3D printers (with room for fourteen). It also contains other handy 3D printing accessories like a filament dryer, cabinets for material storage, digital calipers, a filament scale, printer repair tools, filament labels, and a 3D-printing quick-reference guide.



The new PrintWorks Studio in the Gauss-Johnson Engineering Building, Room 234F.



X1-Carbon Printer

Our most recent printer addition is an X1-Carbon from Bambu Lab that boasts print speeds of up to 500 mm/s. That is over 10 times faster than our current printers! It also comes with an automatic material handling system (AMS) that houses up to 4 spools of filament with the capability to connect up to 4 AMS units simultaneously.

The room itself features large windows with natural lighting and carpeted flooring, giving the room a much more comfortable and quieter atmosphere. A large U-shaped desk provides two CAD stations for on-the-spot design revision and g-code creation. Reference material for print temperatures as well as drying times and temperatures are on display near relevant equipment. Improving long-term organization, all filament labels are now required to show ownership, owner contact info, and ownership expiration date. Extra chairs can be found throughout the room for group work.

Current printers in the space are:

Quantity	Make / Model	Print Materials	Open Filament	Unique Characteristics
2	Sindoh / DP200	PLA, ABS	NO	6 years old and still going strong.
3	Sindoh / 3DWOX1	PLA, ABS, PETG	YES	Flexible magnetic bed, open filament mode.
1	Sindoh / 2X	PLA, ABS, TPU, PETG, Other	YES	Dual-head multi-color or multi-material printing.
1	MarkForged / OnyxOne	Onyx, Nylon, Precise PLA	NO	Remarkable finish, layer adhesion, and precision.
1	*NEW* Bambu Lab / X1-Carbon	PLA, ABS, TPU, PA, PC, PA-CF...	YES	High-speed single-head multi-material printing.

The PrintWorks Studio is maintained and operated by Dr. Perry who also relocated his office (GJ 234D) last summer, just two doors down from the new studio.

INFRASTRUCTURE IMPROVEMENTS

New Fanuc CRX10 Robots Arrive

By Dr. Gabriel Potirniche, Dr. John Shovic, and Jacob Friedberg

The robotics laboratory featured in the last few editions of the ME Newsletter recently got an important upgrade with the addition of two FANUC CRX10 robotic arms. This equipment was purchased through a generous donation from Idaho Forest Group. The robotics arms are equipped with a conveyor belt and can work cooperatively on operations such as pick-and-place, manipulation, and other industrial tasks. The CRX arms are renowned for being compact, flexible, and safe to use in educational settings.

The Mechanical Engineering Department plans to integrate these robots in additive manufacturing research and assembly processes for capstone design projects. Other future applications for this type of robotic system will consider the loading and unloading of workpieces in advanced milling machines. The robots will also be used as educational equipment in courses focused on robotics.



In addition to the FANUC robots, the lab is equipped with four DENSO robotics arms currently being used for a capstone design project and instructional activities. These facilities complement the existing FischerTechnik Simulation Factory with Programming Logic Controller (PLC). The robotics laboratory has been used during the current academic year to deliver courses on PLC Programming and Robotics Engineering Systems to both Moscow and Coeur d'Alene campuses. Students from the Mechanical

Engineering and Computer Science departments have been the main participants in these classes. We plan to continue offering these courses during the next academic year and to ramp up the research that integrates advanced robotics systems.

Along with the infrastructure development, we have recorded an increased interest from our students in studying robotics. During the Fall 2022 and Spring 2023 semesters, approximately 30 undergraduate and graduate ME students participated in courses focused on robotics. The newly-established college-wide Vandal Robotics Club (VRC) has also become an attractive point for our mechanical engineering undergraduates, with more than 30 students joining the club and working on four different robotics projects. In the future, we plan to introduce robotics topics to our sophomore level through various programming activities, ensuring that robotics groups will continue to grow.

UNDERGRADUATE STUDENT NEWS

Jasmeen Manshahia, ME Sophomore



I grew up in a remote area of India where there was barely any air traffic, but the sight of airplanes used to make me excited and curious. I wanted to pursue my degree in the States because of the research opportunities and the hands-on skills the universities offer. The undergraduate research in aviation

in the ME Department is advanced and focuses on solving real world problems. I have been shadowing a Senior Design Project under Dr. Vibhav Durgesh. The project is funded by NASA and its main goal is to test a Prandtl-D wing, which aligns with my goal to manufacture sustainable and safer aircraft.

I have been an active member of the Society of Women's Engineering and Humanitarian Engineering Corps (HEC). The clubs helped me network

with fellow students and to grow professionally by providing leadership and volunteer opportunities.

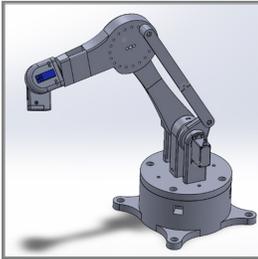
This summer I will be traveling to Bolivia to build latrines and water sanitation systems with fellow HEC members.

My family and I have been going through a financially rough phase, but a scholarship from the ME Department helped me to continue and pursue my dreams.

New Vandal Robotics Club

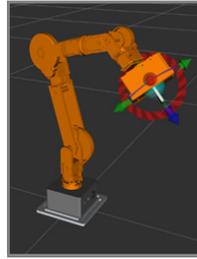
By Grant Lucke

The Vandal Robotics Club aims to encourage an interest in robotics and foster learning through hands-on experience in robotics projects for all students interested. Our club is made up of four teams: three presenting at engineering expo in April, and our AgRobotics team working towards a competition in the summer. Each team offers experience in 3D modeling and printing, component selection, circuit design, and coding. Members walk away with skills that often prove useful later in their degree.



Robotic Arm Team

The team is focused on designing a robotic arm from the ground up. The goal for this semester is to combine all these design elements to create a robot capable of playing checkers and various card games.



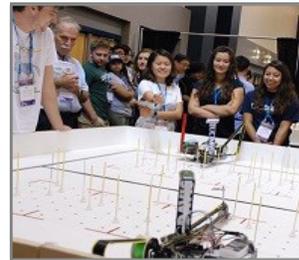
Robot AI Team

The team writes some code for the club to be used on a pre-built robot. The intention is to learn numerous languages and methods of writing code that controls robots and be able to instill into the robots an amount of autonomous problem solving and deduction.



Mobile Robot Team

This team is designing a spider-like robot to traverse terrain. The goal is to be able to present the robot crawling over rocks and sand in uneven terrain.



AgRobotics Team

The team will participate in the American Society of Agricultural and Biological Engineers Student Robotics Challenge this summer. This team will build a robot to accomplish simulated agricultural operations.

At the beginning of spring semester the club hosted an open house in our lab space in McClure 422, allowing students to see the various aspects of the club, as well as the different robotics projects and classes taking place at the University of Idaho. Club members have toured Continuous Composites, Inc. and Dr. John Shovic's robotics lab in Coeur d'Alene, allowing club members to see the different opportunities available to them in the real world.

ASME Hosts Events and a Tour

By Kyle Christopher

The University of Idaho ASME Club is excited to announce that Dr. Matthew Swenson has assumed the role as club advisor this year and has been a great addition to the team!

The ASME club hosted several events during this academic year. In the fall semester, the club hosted an introduction to SolidWorks event. This event was targeted at new users, giving a basic

introduction to the power of 3D modeling. Participants were guided through the process of modeling a cell phone stand, which they were later able to save to 3D print. At the end of the event, participants were shown several resources to continue to expand their SolidWorks skillset prior to taking the Computer Aided Design Methods (ME 301) class.

Near the beginning of the spring semester, the ASME club hosted a tour of the Steam Plant. Most engineering students have heard the Steam Plant referenced in their classes, but few have had the opportunity to tour the plant in recent years. The tour was heavily attended and the ASME club would like to thank Mr. Scott Smith, Power Plant Manager for providing this awesome opportunity.



Prior to spring break, the ASME club hosted a paper bridge building competition, giving out an Arduino kit,

Continued on next page.

UNDERGRADUATE STUDENT NEWS

an electric screwdriver, and Mechanical Engineering shirts to builders of the strongest bridges. Given just three sheets of paper and no fastening materials, students produced impressive bridges, each

holding an average of 6.6 pounds of pennies. To test the bridges to failure, participants were allowed to place paper bowls full of pennies on their bridges, as penny stacking limitation was an issue early in the

competition. The winner of the competition held over 13.6 pounds worth of pennies -nearly \$25 in pennies!

As two of the club's officers are graduating this spring,

there is an opportunity for a few interested students to help decide the future of the club in leadership roles, alongside Dr. Matt Swenson. Interested parties can email Dr. Swenson (swenson@uidaho.edu) for information.

GRADUATE STUDENT NEWS

Daniel Revard

I am a second-year mechanical engineering master's student from Emmett, Idaho. After graduating from Kansas State University in 2015 with bachelor's degrees in mechanical engineering and Spanish, I worked as a product development engineer and technical sales representative for Altec Industries in Duluth, Minnesota.



I have always been drawn to the mechanical design side of engineering. I find great fulfillment in the creative process of transforming a concept to reality, producing an object that serves its purpose well. My time as a product development engineer gave me the opportunity to design, improve, and troubleshoot mechanical and hydraulic systems on boom trucks and cranes. I wanted to deepen my engineering knowledge and take on a new challenge, so I decided to move back to my home state and return to academia to pursue my master's degree in mechanical

engineering at the University of Idaho.

I am currently working on research under Dr. Michael Maughan to develop a system to 3D print fully bio-based wood composite materials with the goal of creating affordable and sustainable construction materials and methods for the future. I am designing and building a custom twin screw extruder drive system that will provide improved mixing and extruding capabilities over the current system. This work should increase printing efficiency and eventually allow for larger prints and the introduction of additives through continuous mixing and extrusion.

In addition to my research, I have enjoyed working with undergraduate students as a senior capstone mentor, helping them solve interesting real-world engineering challenges and teaching them to use the equipment in machine shop. I am enjoying my time at the University of Idaho and am looking forward to completing the research for my master's thesis next year.

Jackson Stump

It seems kind of cliché for a mechanical engineer to say, "From a young age, I have always loved taking things apart, and that is what has led me here", but it's true for a lot of us, and it's something that never fades. That curious enjoyment and satisfaction received from taking apart and discovering the intricate details of how something works is still carried in me today. I am fascinated by these unique designs and ideas, and overall, just fascinated by the things that humans have created and accomplished.

In high school I was always working with my hands and building things. I thought that the trades were a good option, but I knew that they wouldn't satisfy my curious side. I received my associate degree in welding and metal fabrication from the College of Western Idaho and then attended the University of Idaho to begin my engineering path.

At the University of Idaho, there are many opportunities to get involved in research, in many different fields. As an



undergraduate I began working on BLUE SABINO, a project funded by the National Science Foundation with the goal of developing and testing a bi-lateral upper-limb exoskeleton for assessment and rehabilitation of stroke survivors. This undergraduate work has carried over into my graduate research where I am now working to integrate and design components that will provide feedback and control for the wrist and hand.

In addition to my graduate research work, I have assisted in teaching and preparing instructional content for SolidWorks and basic finite element analysis. I am also a mentor for the senior capstone projects, assisting undergraduates with design and manufacturing.

The work and experience I have had at U of I is unrivaled, and I am excited to keep spreading knowledge, and making a difference with the work that I do.

Best wishes to Bill! Welcome Brian!

Change in Machine Shop Management

By Mike Maughan and Brian Petty



Bill Magnie

After many years of service to the Mechanical Engineering Department and College of Engineering, Bill Magnie has retired.

Bill joined Mechanical Engineering in Spring of 2017. During his time as shop manager,

he kept the shop running smoothly and broadened the skills of many undergraduates and graduate students. Bill was also a member of the ME Infrastructure and Development Committee and a safety point of contact for the college.

In retirement, Bill plans to adventure in his camper and visit family. Best wishes Bill!



Brian Petty

The shop is fortunate to have our new shop manager, Brian Petty.

Brian comes to us with over 20 years of experience in machining and manufacturing. He started his career in manufacturing after a high school drafting class introduced him to machining

which set him on the path to earning a degree in Machine Tool Technology.

After years of working primarily in aerospace and R&D, he is excited to be able to teach machining to future generations of engineers and help them turn their design ideas into reality.

Invent Idaho State Finals Competition

By Matthew Swenson



High School Grand Champion winner Arielle Levi received a \$1000 scholarship from the College of Engineering.

Every year, the University of Idaho hosts the State Finals for the annual Invent Idaho competition. This year's competition was held in the IRIC building on March 3. A total of 110 contestants from grades 1–12 pitched their invention ideas in a variety of categories including a) non-working models, b) working models, c) adaptations (to existing products), d) games and gadgets, and e) the “Jules Verne” category. The top three winners from each category at several grade levels were identified by the judges along with a “Best of Category” winner and an overall “Best of Show” winner.

All the awards were distributed to the participants in a follow up awards ceremony on March 4. In addition to the awards, 25 of these young inventors are invited to attend the National Invention Convention held at The Henry Ford Museum in Dearborn, MI on June 7-9. In addition, three participants are invited to present their inventions at our Annual Engineering Design EXPO.

Following the State Finals, Dr. Swenson identified several participants for follow up mentorship sessions with undergraduate engineering students. These participants will be matched with one of our Engineering Ambassadors for a 30–60-minute mentoring session via Zoom, providing an opportunity for Invent Idaho participants to practice their product pitch, enhance their value proposition, and advance their prototypes ahead of the National Convention coming up in June.

In recent years, the ME department has increased its involvement with coordination and judging at the State Finals competition. For this year's event, three faculty members from the ME department (Dr. Potirniche, Dr. Beyerlein, and Dr. Swenson), one ME advisory Board member (Jonathan Richards), and several of the Engineering Ambassadors participated as judges.

Looking ahead, the ME department will continue to explore opportunities to increase our involvement with coordinating the Invent Idaho program (which is the premier invention education program in the Northwest) and expanding the University's outreach throughout the entire state of Idaho. Dr. Swenson intends to attend the National Invention Convention in June to support these young inventors and increase our presence on the national stage.

University of Idaho Established as a New NSF Innovation Hub

One of Eight Institutions Provided Grant

By Matthew Swenson

The University of Idaho was recently awarded a grant (along with seven other institutions) via the National Science Foundation Innovation Corps (I-Corps) program. This grant is part of a \$15 million, 5-year initiative to establish a series of Innovation Hubs at 8 different universities across the “Desert and Pacific Region” (<https://beta.nsf.gov/funding/initiatives/i-corps/view-hubs>) of the U.S. (including the University of Idaho). Locally, this new I-Corps program is coordinated via collaboration between the ME department, the College of Business and Economics (CBE), and the Office of Technology Transfer.



The University of Idaho NSF I-Corps program team (from left to right): John Crepeau (ME faculty), Matthew Swenson (ME Faculty), George Tanner (CBE faculty), and Marc Chopin (CBE faculty).

The NSF I-Corps program is designed to provide training and resources to any aspiring entrepreneurs affiliated with the university. Innovation teams that sign up for the program will participate in a 4-week training course that is designed to interactively teach the Lean Startup process. The training emphasizes customer discovery and refinement of the value proposition for the new business venture and is available for free to participants that are interested.

Participating teams are encouraged to work with a faculty mentor at the U of I and are eligible to access financial resources (up to \$3k) to help with customer acquisition, marketing, or purchasing of supplies to develop a minimum viable product (MVP). Participants are also eligible for future participation in the National I-Corps program to seek additional training and resources for those serious about starting their new business.

It's important to emphasize that this opportunity is available to anyone affiliated with the University of Idaho, including current students, faculty, and alumni. Therefore, if you are an alumnus and have an idea or interest in creating a business venture, this program may be a good fit for you. If nothing else, it is a relatively low risk opportunity to explore potential business viability and acquire valuable training and skills in the process.

If you are interested in learning more about the program, please feel free to contact either Matthew Swenson (swenson@uidaho.edu) or George Tanner (gtanner@uidaho.edu).

Alumni Awards for Excellence

Anas Nawafleh, a Ph.D. candidate in the Mechanical Engineering Department was awarded the **2022 Alumni Award for Excellence** to recognize his outstanding performance in research, courses, teaching, and service.



Anas Nawafleh and Tao Xing

Anas' research has focused on high-fidelity fluid-structure interaction (FSI) simulations and experiments to help understand the mechanism of lung ventilation. FSI is a very challenging problem and is one of the hot and emerging research topics.

In addition to recognition for several fellowships and scholarships, Anas was also awarded a Teaching Assistantship to mentor several capstone design teams.

Anas assisted Dr. Xing with improving ME courses and gave

tours to prospective students and their families. Anas has been managing the University of Idaho 3D Imaging and Printing Laboratory (<https://www.uidaho.edu/3dip>).

"I was privileged to receive this Award, a distinction that stands out as the pinnacle of my academic journey at the University of Idaho," said Anas, "I owe this honor to the exceptional support and guidance from the ME Department, and most notably to my Major Professor, Dr. Tao Xing, whose unwavering support has been invaluable. His mentorship has been a constant source of inspiration, driving me to achieve my best and push my boundaries. I am deeply grateful to Dr. Xing for his role in shaping my academic pursuits, and for his unwavering support in helping me attain this recognition. He has been instrumental in empowering me to develop qualities such as creativity, self-learning, and ambition. His approach is geared towards fostering critical thinking skills, enabling me to gain practical knowledge. He is always available, supportive, and open to active communication, offering guidance whenever I need it." ~Anas Nawafleh

Dr. Tao Xing received the 2022 Inspirational Mentor Alumni Award for Excellence.

Amanda Battles, New Advisory Board Chair

Firstly, I am excited to chair the Mechanical Engineering Department Advisory Board! Secondly, I would like to report that experience tends to sneak up on you. I still feel like a recent grad despite being in my career for over a decade. While I am going to maintain my "new alum" status, I am honored to be filling this prestigious role for the Department.

I graduated in 2011 and 2013 getting my BS and MS in Mechanical Engineering from UI. I earned my PE in 2016. I have worked for Clearwater Paper since graduation, starting as a capital project engineer, then moving on to be the facilities engineer for Clearwater's largest manufacturing site. I recently transitioned to a role as the program manager for our national continuous improvement program.

I live in Lewiston, Idaho where my mother-in-law (UI graduate 1978) helps me look after our five boys: my husband (UI graduate, BS 2011, JD 2014), two future Vandals ages 5 and 7, and two golden retriever fur-kids. We love living in north Idaho and enjoy all the outdoor adventures the area has to offer.



The Mechanical Engineering Department graduates some of the best engineers in the state and we want to keep it that way. But how does a program keep up with the ever-changing world we live in, especially with the differences between academia and industry? That is where the advisory board comes in. The board consists of a diverse range of industry professionals who give the ME Department that critical tie back to industry.

My Chair predecessors have done a fantastic job defining the program. (Thank you, Jonathan and Caitlin!). My goals are to grow the board into industries we are lacking and foster networking among the board members. If you are interested in joining us or learning more about the Mechanical Engineering Department Advisory Board, please shoot a message to medept@uidaho.edu.

Thank you for this opportunity to serve the University and as always: Go Vandals!



LETTER FROM THE CHAIR

Dear Friends of the ME Department,



Dr. Gabriel Potirniche
Department Chair

An example demonstrating our dedication to high-quality undergraduate education is our department's uninterrupted ABET accreditation in the last few decades. Achieving and maintaining such accreditation is a recognition that we achieve the educational outcomes outlined in the ABET programmatic documents and strategy. ABET is the primary accrediting organization for engineering schools and colleges nationwide. Formerly known as the Accreditation Board for Engineering and Technology, the organization changed its name to ABET in 2005. It comprises engineering and technology education experts from 35 professional organizations (<https://www.abet.org/about-abet/at-a-glance/>).

Once every six years, ABET evaluates our department on a broad spectrum of topics related to the organization and delivery of the undergraduate program. Among the chief issues of inquiry is the robustness and relevance of our Program Educational Objectives (PEOs) (<https://www.uidaho.edu/engr/departments/me/accreditation>). The ME department PEOs constitute the tenets by which we perform instruction, mentoring, and advising activities. Periodic reformulation of these objectives is essential in a continuously changing world and increasing demands that our alums face when embarking on an engineering career. We constantly refine our PEOs, by aligning them with the University of Idaho's Learning Outcomes (<https://www.uidaho.edu/provost/learning-outcomes>) and the latest trends in industry and academia.

ABET requires us to establish PEOs in consultation with our stakeholders. The ME Department constituencies are represented by our vast number of alums, the Industrial Advisory Board, the ME faculty and staff members, and our current students. They provide valuable input that guides us in establishing the PEOs. Recently, we have undertaken the task of reviewing the departmental PEOs, which have been in place for the last five years. The departmental ABET committee reformulated these objectives as a first step in this process. Further discussions and modifications took place during several faculty-staff meetings. In addition, we sought input from our American Society of Mechanical Engineers student club members. The table below lists the newly drafted PEOs as they resulted from these discussions:

Newly Proposed Mechanical Engineering Program Educational Objectives

- Attain career advancement based on demonstrated knowledge and skills in areas such as engineering analysis, programming, modeling/simulation, experimental methods, application of codes/standards, design for manufacturing, and integration of information across disciplines.
- Achieve client and stakeholder satisfaction of engineering solutions emphasizing advanced design and analysis methodologies leading to technically informative prototypes and quality products while considering real-world constraints.
- Use effective oral and written communication to develop engineering solutions and clearly convey intended meaning to diverse audiences using a broad range of communication methods.
- Seek lifelong professional development through pursuits such as entrepreneurship, graduate degrees, professional licenses, certifications, career advancement, and exploratory endeavors.
- Collaborate with various individuals while considering public and worker safety, environmental impacts, and ethical and legal practices to develop sustainable solutions for communities and society at large.

Continued on the next page.

I want to thank Dr. Matthew Swenson and Dr. John Crepeau, members of our ABET Committee, for their diligent work in drafting a new version of the PEOs. Also, I greatly appreciate the thoughtfulness and talent that our faculty and staff exerted during sessions when we modified the version of the PEOs provided to us by the departmental ABET Committee. I am also grateful for the feedback we obtained from our ASME student club members and advisory board members.

To finalize the new version of the PEOs, we seek feedback from our broader constituencies on the relevance of these PEOs in the current societal context. We plan to have the final version of the PEOs by this summer. If you have comments on the proposed PEOs, please send them to us at medept@uidaho.edu. Alternatively, you can fill out a short form: <https://forms.office.com/r/SmvVPvk65N>.

Idaho Forest Group Scholarships

Last fall, Idaho Forest Group, LLC. (IFG) donated more than \$600,000 to the Mechanical Engineering and Computer Science Departments for the development of educational activities focused on industrial robotics.

Some of these funds were used to acquire four FANUC robots, equip two robotics laboratories in Moscow and Coeur d'Alene with videoconferencing equipment, and provide scholarships to eight students from the two departments.

We gratefully acknowledge the generous support of Idaho Forest Group, LLC.

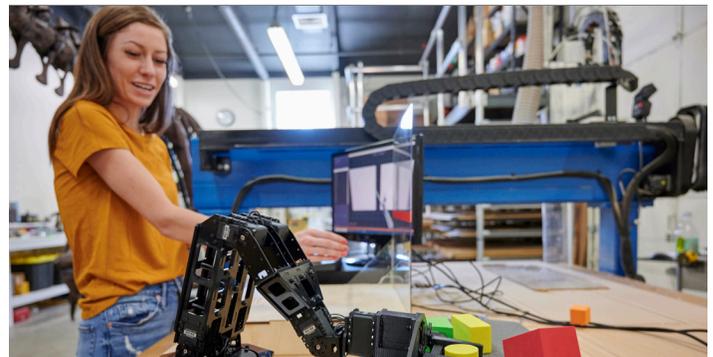
Below is a list of IFG scholarships recipients in the Mechanical Engineering Department.

- \$2500 - Grant Lucke, Senior
- \$2500 - Kathryn Reece, Senior
- \$2500 - Oakely Todd, Senior
- \$2500 - Jackson Stump, MEngr

ENGINEERING DESIGN EXPO

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