

Mechanical Engineering Department Newsletter

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Nuts and Bolts Fundraising:

Please consider giving a tax deductible donation to the ME General Fund. To donate, visit the CEPS homepage at https://giving. unh.edu/cepsme and select the Donate tab located on the far right menu bar to select an ME fund. THANK YOU!

Awards & News

- Milovan Zecevic (Graduate Student, Advisor Prof. Marko Knezevic) spent the summer interning at Paul Scherrer Institute in Switzerland.



- The American Society of Mechanical Engineers (ASME) Fluids Engineering Division (FED) Graduate Scholar of the Year Award was presented to John Turner, pictured left, (Graduate Student, Advisor Prof. Martin Wosnik) for the paper "Uncertainty Analysis In A Scale Model Wind Turbine Array Boundary Layer" at the 2017 Fluids Engineering Division Summer Conference in Waikoloa, Hawaii.

- Pavlo Knysh (Graduate Student, Advisor Prof. Yannis Korkolis) spent the summer working at the Institute of Industrial Science at the University of Tokyo. The research topic is deformation-induced surface roughening of metals, particularly, aluminum alloys. Pavlo is working with Prof. Marko Knezevic, Prof. Tsuyoshi Furushima and his graduate student Kanta Sasaki.

- At the beginning of the summer Jackie McNally, pictured right (Graduate Student, Advisor Prof. Yannis Korkolis) took part in the American Society of Mechanical Engineering (ASME)/Manufacturing Science and Engineering (MSEC) student design competition held in LA, California where she presented on the Continuous-Tension-Compression Machine. After the conference, Jackie spent the rest of the summer in Japan working with Prof. Kuwabara and his students at the Tokyo University of Agriculture and Technology (TUAT) testing various specimens using their bi-axial machine.



Three National Science Foundation (NSF) awards were received from the division of Civil, Mechanical and Manufacturing Innovation (CMMI) in Materials and Manufacturing.

1. Profs. Brad Kinsey and Yannis Korkolis: "Intelligent Sensing and Control of a 3D Servo-Press for Sheet Forming", which is a collaboration with the Production Technology and Forming Machines (PtU) Institute at the Technische Universität Darmstadt in Germany.

2. Profs. Todd Gross and Igor Tsukrov: from the division of Civil, Mechanical and Manufacturing Innovation (CMMI) "Intrinsic Residual Stresses in 3D Woven Composites: Measurement, Modeling, and Mitigation" working in collaboration with New Mexico State University on improving manufacturing of 3D woven composites.

3. Prof. Marko Knezevic in collaboration with Dr. Irene Beyerlein from the University of California Santa Barbara: "GOALI/Collaborative Research: Immiscible Phase Interface-Driven Processing of Ultrafine-Laminated Structures for Lightweight and Strong Magnesium-Based Sheets."

CAREER & PROFESSIONAL DEVELOPMENT



Stephanie Whitney CEPS Career and Professional Development Director



Riannon Nute CEPS Career Counselor

<u>riannon.nute@unh.edu</u> 603-862-4984

Stephanie.whitney@unh.edu 603-862-0997

Fall Semester Events:

BAE Systems Technology Solutions R&D Division Information session for seniors and graduate students

Thursday, 09/21/2017 at 5:10 PM - 6:00 PM Kingsbury Hall, N111

> Resume Review Day Employers include Hubbell, Medtronic, Portsmouth Naval Shipyard, and more! Tuesday, 09/26/2017 at 11:30 AM - 3:00PM Granite State Room, Memorial Union Building (MUB)

UNH Career & Internship Fair Companies include: Pratt & Whitney, BAE Systems, Cre

Companies include: Pratt & Whitney, BAE Systems, Creare, General Dynamics and more! Tuesday 10/03/2017 at 12:00 PM - 5:00 PM Whittemore Center Arena

> Interview Day Wednesday, 10/4/2017 at 9:00 AM - 1:00 PM Granite State Room, Memorial Union Building (MUB)

PATHWAYS Mentoring Program

This program is hosted by the UNH Career Center in coordination with the Alumni Association. UNH Pathways brings alumni and undergratuates together for professional growth. Alumni provide valuable insight on navigating through the post-college world. Students build career networks and develop skills to become better professionals and leaders.

The program runs from September to April and is structured around monthly mentor and mentee meetings, and includes two on-campus meetings of the entire Pathways group.

Registration is closed for this academic year. However registration is now open for next academic year. <u>Click here to apply</u>.

~Kimia Fereydooni (Sophomore) is participating in the 2018 mentoring program.

Be sure to to check your weekly career email (sent every Sunday) for the most up to date events and activities!

Any questions, comments, or just want to connect, contact Stephanie Whitney!

FACULTY SPOTLIGHT



Materials Science with Professor Krzanowski

Prof. James Krzanowski who is currently Director of the Materials Science Program at UNH, specializes in the areas of coatings, thin films, tribology and materials characterization. While Prof. Krzanowski has spent most of his career at UNH, he has also worked in private industry and government laboratories. After receiving his BS degree in materials science at the Stevens Institute of Technology, Prof. Krzanowski worked at IBM for two years in the area of product development. That experience gave him valuable insight into how industry develops and launches new products into the marketplace. However, working at an intensely high-tech company like IBM also gave him the desire

to approach problems at a higher and more technical level. So he entered graduate school at MIT in the Fall of 1979. While at MIT, he conducted his thesis research in the areas of phase transformations and electron microscopy. After receiving his PhD in 1983, he took a position with the Army Materials Research Laboratory in Watertown, MA. He continued in that position for two years investigating the microstructure and mechanical properties of alloy steels. However, the Army soon started a process of restructuring and the closing of the Watertown laboratory was on the horizon. Since he always had an interest in teaching as well as research, he sought out academic positions and became of professor at UNH in the Fall of 1985.

While at UNH, Prof. Krzanowski has introduced and taught many new courses in Materials Science, including the topics such as x-ray diffraction, electron microscopy, and electronic properties of materials. He has also taught graduate and elective courses on thermodynamics and kinetics of materials and thin film science and technology. However, most students in ME probably know Prof. Krzanowski from the required Introduction to Materials Science class, which he has now taught over 30 times! Nonetheless, he continues to be excited about teaching this class as the field of Materials Science is constantly evolving with new discoveries and the introduction of new materials. When he arrived at UNH, one of Prof. Krzanowski's first research topics was to investigate the process of ultrasonic wire bonding (UWB). The UWB process is commonly used in integrated circuit manufacturing but at the time the fundamentals of the process were poorly understood. Using electron microscopy techniques he was able to demonstrate the process of dynamic room-temperature annealing which was a key feature of the bonding and adhesion process. Later, Prof. Krzanowski became interested in the mechanical properties of thin films and multilayers. He was able to demonstrate hardening and strengthening mechanism operating in multilayer thin films. This work then became more focused on transition metal carbides that are used for wear-resistant (tribological) applications. The nano-structured nature of these thin films was intensively investigated in these studies. The work then shifted to the study of nitride thin films, particularly those used for machining applications. Most recently, he has been investigating stainless-steel nitrides with unusual structural features.

Prof. Krzanowski resides in Lee, NH with his wife Beth and their dog Layla, a Hungarian Vizsla. They have two daughters, one of whom will be teaching English in Hull, MA this Fall and the other who is a social worker in Portland, Maine. He spends much of his spare time working in his home shop, where he makes almost everything out of wood, including furniture, bowls, boxes, pens, guitars, and ukuleles.

UNDERGRADUATE SPOTLIGHT River lannaccone



vehicle, River has discovered the need for wireless systems that would establish this kind of communication. Currently, the two teams want to be able to track the ROV using either acoustic modems or recently designed underwater GPS by BlueRobotics. River, along with the teams, will be traveling to Seattle in mid-August to present their work to NAVSEA.





Sarah Mayer is a junior in the Mechanical



Engineering major. With the support of CEPS faculty and staff, she became the most recent UNH mechanical engineering student to complete a co-op experience. From February through June, she worked full time in as a manufacturing engineer at Sig Sauer. Some of her responsibilities included: designing new and revising existing fixtures; and gages used in the production of gun parts, creating models, assemblies, and drawings in Solidworks; and quoting and ordering tooling from outside vendors. Of the experience, Sarah says, "the extended format made the transition from school to industry easier and enabled me to contribute to more interesting and complex projects." She enjoyed the fast-paced work environment, especially seeing projects move from ideas to reality quickly: "Things that are designed one day are used on the manufacturing floor a few weeks later."

Sarah has an interest is biomechanics and the intersection between mechanical engineering and the medical field. She hopes to work in industry after finishing her undergraduate degree and then pursue graduate studies in engineering.





See Stephanie Whitney, CEPS Career and Professional Success Director, your advisor, or Prof. Kinsey if you are interested in pursuing a co-op experience.

UNDERGRADUATE SPOTLIGHT

Audrey Balaska is a junior in the Mechanical Engineering major. She has spent the summer at a National Science Foundation Research Experiences for Undergraduates Site at Cleveland State University as part of their Rehabilitation Engineering Program. Audrey worked with the Physical Therapy Department in their Motion Analysis Lab to create a wireless load cell prototype which could sync with motion capture cameras. The load cell determines how much people rely on a harness during balance training. The research experience also included learning opportunities outside the Motion Analysis Lab including spending a day in a wheelchair, a tour of a gym for individuals with spinal cord injuries, and the



chance to participate in a Go Baby Go Build. Audrey hopes to get her PhD in Mechanical Engineering, and then work in the Rehabilitation Engineering field. Her current goal is to create independenceenabling devices for those who are reliant on wheelchairs. This fall semester Audrey will begin working for the Occupational Therapy department as a mechanical engineering student worker. Besides being a student, Audrey also plays the cello and is an RA.

Audrey Balaska





Andrew Masters

Andrew Masters is a junior in the Mechanical Engineering major and is from Northern New Jersey. On campus, he works as a TA in the Kingsbury machine shop, a research assistant studying STEM education under Dr. Carmela Amato-Wierda, and the controls team lead on the UNH Formula SAE racing team under the advisement of Dr. Todd Gross. Andrew has applied his education in the automotive industry through two internships with Mercedes-Benz Engineering Services, and will continue his relationship with the company this fall

when he begins a 6-month internship with the brand's Powertrain and e-Drive Research and Development department. Last summer Andrew conducted research at the Institute for Mechatronic Systems (IMS) at Technische Universität Darmstadt in Germany as part of an NSF REU. His project there involved studying and testing motion cueing algorithms on the IMS dynamic driving simulator. After his bachelor's degree, Andrew wants to continue his education, and plans to enroll in an engineering PhD program, then pursue a role in automotive, motorsports, or aerospace related industries.

ALUMNI/COMPANY SPOTLIGHT



The Heart Doctor Kevin Soucy, B.S.M.E. '03

Kevin earned his Bachelor's degree in Mechanical Engineering from UNH in 2003. Kevin began working with Prof. Todd Gross after his freshman year at UNH, which marked his first exposure to academic research. Upon graduation, he studied Biomedical Engineering

at Johns Hopkins University (Baltimore, MD), receiving his Master's degree in 2005 and his Ph.D. in 2010. His graduate research involved cardiovascular physiology and vascular biology, which related well to his mechanical engineering education of mechanical and fluid stresses. Specifically, his research studied the effects of aging and ionizing radiation on vascular health, with a focus on mechanotransduction and oxidative stress pathways. After completing his graduate studies, Kevin wanted to further integrate his engineering training with the biomedical sciences. He joined the Advanced Heart Failure Research (AHFR) group, as a post-doctoral associate in the Bioengineering Department at the University of Louisville (Louisville, KY). Kevin became full-time faculty in 2013, with joint appointments in the Bioengineering Department and the Cardiovascular & Thoracic Surgery Department. As part of the AHFR team, Kevin has studied medical devices, with a primary focus on left ventricular assist devices and total artificial hearts to treat heart failure patients. In this field, he has been able to work on the design and operations of the devices, as well as study the physiological impact of implantable mechanical circulatory devices. The long-term goal is that continued research will advance these mechanical circulatory devices beyond palliative therapy to become part of a therapeutic strategy that recovers heart failure patients.



Kevin and his advisor, Dr. Dan Berkowitz, at his Ph.D. graduation from Johns Hopkins University in Biomedical Engineering.



Advanced Heart Failure Research team after a successful study.



UNH alumni that traveled to Kevin and Tricia's wedding at Churchill Downs in Louisville, KY, including 6 M.E. alumni.





Tamir Blum, B.S.M.E. 2016

Tamir (Second person from the right) recently took a quater-long leave of absence from his Master's program at UCLA to intern at SpaceX during the Spring quarter within their Dragon Mechanism Design group, working on their future crewed capsule. After SpaceX, Tamir interned at a small energy/UAV company, Aerovironment, where he worked on small military drones. After the summer Tamir will return to UCLA to work on his Masters degree.

Nicholas Landry, B.S.M.E. 2014

Nicholas got married to Shari Peterson, UNH '15 on March 25, 2017. He will be starting a Ph.D in Applied Mathematics at CU Boulder this fall.

Evin Williams, B.S.M.E. 2008

Laura and Evin had a baby boy on May 25th. Pictured to the right, he is outfitted in Wildcat Blue. Evin and Laura met at UNH in 2007, and were married in 2011.

Evin has been at Turbocam since starting as an intern in the Fall of 2007. He began in his current group, Turbocam Aero Engines, in 2014 when it was a small startup. Evin stated that "Business is booming and I am happy to have several UNH M.E. Alum on the team! We have Andrew Lapointe, Brett Packard, David Ross, Jesse Schraufnagel, and Intern Reiley Webb."









Laura (Woodbury) Knott, B.S.M.E. 2008

Laura Woodbury (BSME '08) was married to Trevor Knott (BSCivE '08) on Saturday, June 4, 2016 at the Inn on Peaks Island, Maine. They live with their golden retriever, Lincoln, in Exeter, NH. Pictured left, shows the twenty UNH alumni present at the wedding, including mechanical engineers Mark Woodbury (BA Zoology '76, BSME '78, back row, 6th from left) and Evin Williams (BSME '08, back row, 5th from right). Laura works for Raytheon Company's Mechanical Engineering Directorate in Tewksbury, MA. Trevor works as a civil structural engineer for NextEra Energy at Seabrook Nuclear Power Plant. Mark, Laura's dad, works for Hewlett Packard Enterprise in their High Performance Computing group. He and his wife, Karen, also met at UNH and celebrated their 40th wedding anniversary the day after Laura and Trevor's wedding.

Nathan Richards, B.S.M.E. 2000 M.S. 2002

Nathan has been principal investigator for a NASA funded Upset Recovery Program that recently concluded with flight testing in a Learjet this past spring. The project and flight test are the currently featured cover story in Aviation Week and Space Technology magazine (Photograph to the left is a copy of the cover). The Aviation Week and Space Technology article. Aviation week also put together a video overview. Additionally, AVWeb published a separate article.

Michael Chapman, B.S.M.E. 1985

Michael was recently promoted to President of Hub International, South Region, a large insurance brokerage firm with 1000 employees on January 1st. Michael and his wife Doreen live in Kiawah Island, SC. His daughter, Margaret Rizza, graduated from UNH cum laude with a degree in Human Development and Family Studies in 2016. Go cats!

Ron Lowy, B.S.M.E. 1977

Ron Lowy, Chairman and Chief Executive Officer, of PharmaJet Inc was quoted in a PharmaJet article for Needle-Free technology.

Remember When...



A photo of the Mehcanical Engineering faculty and staff in 2002!



Professor Brad Kinsey Chair

Lauren Foxall Graphic Designer Editor

Tracey Harvey Editor Public Relations

Barbaros Celikkol Editor-in-chief We would like to stay connected with our alumni and friends and would welcome newsletter contributions and suggestions.

Please send your news items, e.g, awards, promotions, personal updates, memories of UNH, and suggestions to Lauren Foxall at lauren.foxall@unh.edu.

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Check out full length stories and pictures on the Mechanical Engineering website: http://ceps.unh.edu/mechanical-engineering/

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