

IME NEWSLETTER

Issue 9 Spring 2024



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Dates to Remember:

- July 4: Independence Day Holiday (no classes, offices closed)
- August 2: Last day of summer classes
- August 26: Fall Classes begin at 4pm
- Career Expo: September 25
- Homecoming Week: September 16-21
- IME Advisory Board Meeting: September 21
- Commencement: December 20

COVER STORY: Dan Whitney, IME Lab Technician

Dan Whitney: A Journey from Industry to NDSU's IME Department

Let's take a closer look at Dan Whitney, an important figure within North Dakota State University's (NDSU) Industrial and Manufacturing Engineering (IME) department. With a career spanning both the shop floor and academia, Whitney brings a wealth of industry experience to his role as lab technician.

Whitney's story begins in the heart of St. Joseph, Minnesota, where his parents owned a successful machine shop. Growing up surrounded by the hum of machinery, Whitney's passion for manufacturing was ignited from an early age. Following high school, he pursued formal education at St. Cloud Technical College, graduating from the machining program in 1990.

His professional journey is a testament to versatility, encompassing a diverse range of manufacturing sectors. From crafting precision granite OEM machines to navigating the complexities of aluminum and magnesium die casting, Whitney's expertise knows no limits. His venture into automated food and pharmaceutical packaging equipment further underscores his adaptability within the ever-evolving manufacturing landscape.

Dan joined NDSU IME in the fall of 2022. Transitioning from industry to academia was a natural progression for him, fueled by his ambition to work with future engineers. His decision to join NDSU was influenced by the university's reputation for academic excellence and its dynamic community spirit.

A key aspect of Whitney's role is debunking misconceptions surrounding welding and manufacturing processes among students. He emphasizes the importance of thorough planning and preparation, highlighting the intricacies involved in even the most basic machining tasks. By providing hands-on learning experiences, Whitney bridges the gap between theory and practice, ensuring students develop a comprehensive understanding of manufacturing principles.

The IME lab serves as a hub for experiential learning, where students are encouraged to explore, experiment, and innovate. Beyond traditional classroom discussions, Whitney's teaching approach revolves around active engagement, empowering students to apply theoretical concepts in a practical setting.

For Whitney, the appeal of IME lies in its inherent versatility. Drawing from his own career trajectory, he emphasizes the countless opportunities available to IME graduates. Whether it's designing groundbreaking technologies or optimizing manufacturing processes, IME equips students with the skills and adaptability needed to excel in any industry.

Dan Whitney's role in guiding future engineers at NDSU demonstrates how real-world experience complements academic training. His commitment reflects the excellence that defines NDSU's IME department.



MESSAGE FROM THE CHAIR, Dr. Kambiz Farahmand

As I reflect on the past academic year, particularly following my return from the IISE National Conference in Montreal, I find myself filled with both gratitude and excitement for the future of our department. Since stepping into the role of interim chair in July of 2023, the journey has been extensive yet fulfilling. The best part is seeing students first join our program as young, new learners and leave as grown, ambitious, and successful adults. Attending the May commencement was a highlight of the year. There's something so exciting about seeing our students take that walk across the stage, and seeing the pride on their faces and that of their families. I also had the pleasure of hooding Katherine Roth as she received her doctorate degree from our department.

Our graduating students have made us immensely proud, securing positions in diverse industries ranging from aerospace to healthcare. The fact that many received multiple job offers with above-average salaries is a testament to the quality of education and mentorship they have received.

However, as we celebrate our successes, we must also acknowledge the challenges that lie ahead. The enrollment landscape is shifting, presenting us with new hurdles to overcome. Conversations with colleagues from Industrial and Systems Engineering departments across the nation have shed light on the common struggle of declining enrollment and decreased student retention. Recruiting graduate students has been another uphill battle, with obstacles from visa issues and funding constraints.

We have also been consistently preparing for our ABET accreditation. This has been a huge undertaking and takes the combined effort from all our faculty and staff. The Self-Study reports are due for both programs at the end of June and we will have our site visit October 27-29.

Despite these challenges, we've excelled as well. Dan Whitney and Dr. Maleki are offering the Manufacturing Processes course to nine students from the United Tribes Technical College this summer. We are also offering our summer service courses (IME 440/640 & IME 460/660) and have over 20 students in each class serving both undergrad and grad students. We are hosting two students for our REU (Research Experience for Undergraduates) program this summer. One student is from Colombia and the other from Mexico. Both students will be working with Dr. Lopez on different topics. Additionally, the department is welcoming two students from the Governor's school. Dr. Narayanan and his graduate student, Raihan Quader, will be mentoring these students as they work in the automation lab and during their time on campus.

I'm particularly excited about the proposal for an online Master's program in Project Management—a joint effort between the College of Engineering and the Business school. We are leading the effort to develop a program that caters to industry professionals who have been working 5 years or more. Dr. Osman, Dr. Pirim, and Dr. Bilen-Green will be working this summer to develop online material for their courses as part of this effort.

We are also working closely with others in the College of Engineering to develop 4+1 and 3+1 agreements with universities in India to recruit undergraduate students. Other recruitment efforts include working with the International Office to develop strategies to recruit graduate students from Colombia and Mexico. These efforts highlight our commitment to global partnerships and diversity.

MESSAGE FROM THE CHAIR CONT'D

Another area we will still focus on is recruiting transfer students. There are many students who don't know what Industrial and Manufacturing Engineering is and once they learn more they are excited to join our program. Our transfer students will work with our Professional Advisor, Joel Hanson. Joel will be an asset for our department as he assists us in recruiting transfer students both internally from NDSU and externally from other colleges and universities.

I'm also thrilled to welcome Kelly Schutt as our new full-time Academic Coordinator and Kristin Boll as our new Business Coordinator. Their expertise will undoubtedly strengthen our administrative operations.

During the Council of Industrial Engineering Department Heads (CIEDAH) meeting, it became apparent that we continue to struggle with an identity crisis within our programs. Reflecting on numerous individual and group discussions, it occurred to me that our profession centers on four key areas: People, Processes, Technology, and Data. Looking ahead, industrial engineers are sure to play a significant role in the areas of Data Science and AI. Additionally, our discipline stands out for its emphasis on people and effective people management—an aspect we can further capitalize on. Our expertise extends to areas such as Ergonomics, Human Factors, Safety, Facilities Design and Management, Inventory and Supply Chain, and Operations Research, giving us a distinct advantage over other engineering disciplines. It's clear that designing, implementing, and managing technology and processes have always been at the core of our profession. With such a strong foundation and diverse skill set, it's important that we increase the visibility of industrial and manufacturing engineering to attract new students and members to our profession.

In closing, I'm optimistic about the opportunities that lie ahead, including research opportunities, and areas for which we can gain additional resources, especially working with our Advisory Board under the leadership of Bob Heller, securing additional scholarships for our students. Together, with the support of our faculty, staff, and advisory board, we will navigate the challenges ahead and continue to provide a strong program for our students.

Warm regards,

Kambiz Farahmand





Thank you Chuck!

We would like to express our sincere appreciation to Chuck Choate for his invaluable assistance to our IME 335 Welding Technology course this spring. Chuck taught at NDSU for 40 years and came out of retirement to help us when we needed him. His expertise has been a tremendous asset, greatly benefitting our students. We are grateful for his dedication and contributions.

Dan Whitney, Talia Frahm,
Chuck Choate

Ring and Pin Ceremony

On Friday, May 10, 2024, the College of Engineering held its biannual Ring and Pin Ceremony. This ceremony is a combination of two important events, the Order of the Engineer and the Pledge of the Computing Professional. Congratulations to all who took part in this momentous occasion. Pictured here are IME students showing off their certificates and new rings.



Courtney Halter, Jacob Schwarz,
Zach Buschena, & Megan LaLonde

IME Ambassadors

We would like to introduce our upcoming IME Ambassadors for the 2024-25 school year. Engineering Ambassadors are a distinguished group of undergraduate students selected to represent the College of Engineering at events for alumni, industry leaders, prospective students, and current students. We would like to thank the returning Ambassadors for their commitment to the IME program and the CoE.

Jacob Schwarz
Kadon Strong
Dawson Galde
Laiken Sturn
Annika Tweten
Lauren Berg

We would also like to extend a warm welcome to our new IME Engineering Ambassadors!



Sam Moe

Junior in
IE&M



Caryn Marty

Senior in
IE&M



**Mickenzie
Doherty**

Senior in
IE&M



Ethan Blesie

Sophomore
in IE&M

Visiting Students

This summer we had the pleasure of welcoming 9 students (6 more than last year), along with a mentor from the ASPIRE program. This program represents the 6 states of Colorado, Montana, North Dakota, South Dakota, Wyoming, and Utah. The mission of the organization is to increase educational opportunities for low-income and first-generation college students. The students were enrolled in IME 330, which is taught by Reza Maleki and Dan Whitney, in the IME department. Below is a brief bio from each student and their mentor.

Camille Youngbird

College & City: United Tribes Technical College, Bismarck, ND

What brought me to ASPIRE: I couldn't list just one reason! The main reason is to get exposure to NDSU campus life. Meeting people ahead of being here is such an awesome asset.

Future Plans: Again, I couldn't list just one! Ultimately, I would like to own a shop where I could design and work on my own projects. Educationally, I'd like to become a P.E., although I haven't quite solidified a discipline. It will definitely be along the lines of materials science/manufacturing. That is also subject to change! Any employment? Not for me. I will for sure do some various jobs here and there, but in the long run I will work for myself.

Personal interests and hobbies: I love sports watching and playing. Swimming is a big hobby and singing in the shower! Ha-ha. I love hanging out and getting jobs done!



Lanaya Cummins

College & City: I currently attend the tribal college on the Fort Berthold reservation, which is known as Nueta Hidatsa Sahnish College in New Town, North Dakota.

What brought me to ASPIRE: I decided to join ASPIRE for not only the experience of living on a university campus, but for the credits that we can partake in. I also joined to figure out the different engineering programs I may want to pursue.

Future Plans: My plan for the future is to graduate and begin working as soon as I can. I am still undecided on where to attend after receiving an Associate's degree in pre-engineering at NHSC. I believe that Manufacturing engineering is a great choice for me regarding my past experiences and interests.

Personal interests and hobbies: My personal interests include lifting, working out, running, playing basketball, staying healthy and active when I am not in the classroom. I also enjoy spending time with my friends and family, especially my best friends, brothers, and nephews when they happen to be around.



Taylor Amiotte

College & City: United Tribes Technical College, Bismarck

What brought me to ASPIRE: I really didn't know too much about engineering. I wanted to know more about it. That's how I got involved in Aspire.

Future Plans: I plan on getting my Associate degree in computer information technology. Afterwards, I plan on getting my Bachelor's degree in computer programming. Since I took this course that might change. I really enjoyed learning about machining. It's very interesting and I do like to build and make things. I am going to look more into the different types of engineering. For a future job I want to get into cybersecurity or into programming. I don't care where, I would be happy with any company.

Personal interests and hobbies: Some of my personal interests are learning how technology works. I like to know how the programming side of technology works. I also enjoy cooking and eating different types of food. Some of my hobbies are boxing and working out. I also like to go hiking and enjoying nature.



Richard Dean Patton III

College & City: I go to Oglala Lakota College, and it is in Pine Ridge South Dakota. It's a little small town close to the Nebraska state line.

What brought me to ASPIRE: What motivated me to attend this ASPIRE camp is to find new interests and to see what I want to go in to and what to look into more. I also want to inspire my brothers to do big things so they won't have to be scared to explore new things and to let them know that it's okay to leave, so that they too can achieve their dreams as what I'm doing.

Future Plans: My plans/hopes are to pursue and finish my education, because most of my family never finished college and I want to change that so I can motivate them in a way that they can do it too, if they put their mind to it. I just want to be the role model so that my family won't lose hope, not for me but for future generations. I want to change everything so that no one can look down on me and my family. I want to change that.

Personal interests and hobbies: My personal hobbies are that I like to travel, I want to see new things, I play sports such as golf and basketball. Sometimes I play baseball, but down in my reservation we call it fast pitch and it's held every summer so that's what I do during my free time. I help my parents a lot when it comes to keeping the house clean and maintained. I do like to help a lot and that's all I want to do. My other hobbies are that I love to build Legos, especially the most challenging.



Cinnamon Arpan

College & City: United Tribes in Bismarck, North Dakota

What brought me to ASPIRE: I love to try new things and it looks good on my Scholarships.

Future Plans: To maintain a 4.0 GPA every semester and continue this journey to the National Guard.

Personal interests and hobbies: I love being a mother and going to college to learn new things.



Silas LittleDog

College & City: United Tribes in Bismarck, North Dakota

What brought me to ASPIRE: Learn about machining process.

Future Plans: Graduate with a mechanical engineering degree and have a job in that field.

Personal interests and hobbies: Working on vehicles, building or repairing.

Dustin Delorme Jr.

College & City: United Tribes in Bismarck, North Dakota

What brought me to ASPIRE: An interest in engineering and touring University.

Future Plans: I plan to keep going as far as I can within academia. I haven't given thought to employment. I just want to succeed in my schooling.

Personal interests and hobbies: Music Production is my prime interest and content creation. My hobbies are writing, Legos, and skating.



Khalil Grant

College & City: Fort Lewis College, Durango CO.

What brought me to ASPIRE: My motivation to participate in Aspire is getting paid and gaining experience to further my knowledge in STEM.

Future Plans: My plan is to finish my Bachelor's degree and pursue a career in mechanical engineering.

Personal interests and hobbies: My interests and hobbies include video games, music, basketball, and MMA.

Seth Belgarde (Seth took this course last summer and this year has been a mentor for the students).

I am a graduate of Turtle Mountain Community College in Belcourt, ND with an Associate's Degree in Engineering. I will be attending NDSU in the fall for mechanical engineering. This is my third year participating in ASPIRE. For the first two years, I was a student, taking digital systems the first year and manufacturing processes the second year. This year, I am a mentor for the program, helping in the lab and helping students with classes after hours.

After graduation, I want to continue for my Master's degree. After finishing that, I want to either continue my work with Los Alamos National Laboratory or move into private industry. Outside of school, I volunteer at the only reptile rescue in North Dakota, enjoy working on my project vehicles, and I am heavily involved with music. I am a drummer and run audio for a band based out of Belcourt, ND. I am also a tech for M1 Productions, based out of Fargo, ND.



Master of Engineering

IME now offers a Master of Engineering Degree! The Master of Engineering (M. Eng.) degree in Industrial and Manufacturing Engineering is designed to provide a flexible graduate experience option for professionals with limited time resources. This program is ideal for those who find a full-fledged master's research project and thesis development impractical. This degree program requires a minimum of 30 credits of study and includes a written examination (No thesis!). Students can choose from various areas of emphasis within the program to tailor their education to their specific interests and career goals.

It's gets better! We also offer this option to both Industrial Engineering & Management and Manufacturing Engineering undergraduate students as an **Accelerated Master of Engineering Program**. The Accelerated Master of Engineering degree offers a unique opportunity for motivated undergraduate students to easily transition into advanced studies, enhancing their expertise in Industrial and Manufacturing Engineering (IME). This program, designed to cater to the ever changing needs of the industry, aims to equip graduates with an understanding of industrial and manufacturing systems, promoting career growth and expanding professional opportunities.

AWARDS & RECOGNITIONS

Industrial Engineering Student Receives Scholarship

Dean Mount, a senior in Industrial Engineering, has been selected to receive the \$5,000 Material Handling Education Foundation, Inc. (MHEFI) Honor Scholarship for the 2024/2025 academic term. His scholarship will be awarded in two installments of \$2,500 each. The Foundation offers scholarship award opportunities to undergraduate students who are pursuing a material handling, logistics or supply chain career. Dean earned this scholarship by demonstrating dedication to achieving excellence, strong leadership skills, potential for future growth as a leader and persistence in the pursuit of education.

Congratulations Dean!



Recent Publications

Congratulations to IME Assistant Professor Lokesh Narayanan, IME graduate student Raihan Quader, former IME Chair David Grewell, and Leo Klinstein on their recent publication in the *International Journal of Advanced Manufacturing Technology*. The article, titled 'Evaluation of the Influence of Ultrasonic Vibration on Physical, Tensile, and Morphological Properties of Fused Deposition Modeled Specimens', explores how the application of ultrasonic vibration (USV) post-fabrication could minimize intrinsic defects in fused deposition modeling (FDM) when printing polymers. For more information, click [here](#).

IME Faculty Award Winner

Congratulation to IME Professor Canan Bilen-Green for being selected as the recipient of the Chamber of Commerce NDSU Distinguished Faculty Service Award for the 2023-24 academic year. This prestigious award acknowledges faculty members who have achieved distinction in their profession and have made significant service contributions to the community and region. Dr. Bilen-Green's dedication and contributions to NDSU and our IME Community are truly appreciated.

NDSU Foundation Magazine highlights the life and career of Joe Stanislao

Joe Stanislao served as Dean of NDSU's College of Engineering from 1975 to 1993. His remarkable career was honored by the IME Department when he received the IME Recognition of Excellence Award last fall, celebrating his significant contributions to NDSU, IME, his profession, and the community. This spring, *The Foundation Magazine* featured his inspiring journey in the article titled "Component Parts: The Making of an Engineer's Legacy"; authored by Micaela Gerhardt. You can read the full article [here](#).



Photo by Seth Anderson

Alumni Spotlight..... Hannah Lingen

Hannah Lingen, a 2017 graduate of NDSU's Industrial Engineering and Management program, was featured in Fargo Inc! magazine for her participation in United Way's 35 Under 35 Women's Leadership Program. This initiative aims to bolster leadership abilities and self-assurance, amplify the influence of women in various areas, including workplaces, households, and communities, and, most importantly, inspire collaboration and unity. Hannah is currently a Process Project Manager at Marvin Windows and Doors. Read the full article [here](#).



Industry Connections Program: A Student's Journey to Success

This spring, the College of Engineering launched the Industry Connections mentoring program. Designed to help students build on their classroom knowledge and gain insights from experienced professionals, Industry Connections paired 27 freshmen and sophomores with industry experts from the Fargo area in its inaugural cohort. Among the participants was one of our exceptional IME students, Ethan Blesie. We asked Ethan to share his experience with this new program, and here's what he had to say.

A Positive Experience with Practical Benefits Ethan described his participation in the program as highly positive. The program provided opportunities that would have been challenging to access otherwise. He received personalized feedback and an informal workshop focusing on resume building, career fair preparation, and interview techniques. Additionally, a professional engineer reviewed his ME 212 (CAD) project, and he gained a wonderful reference for his internship application from an engineer at Marvin Windows and Doors. The program also helped him navigate multiple job offers and provided the chance to meet Chris Barta, the Senior Director of Operations at Marvin in Fargo.



Initial Motivations and Expectations Ethan admitted to initial uncertainty about the program due to a lack of peers to consult. However, his desire to learn and explore new opportunities motivated him to join. Looking back, he appreciates the knowledge and experience he gained.

Effective Pairing with a Professional Mentor The pairing process with Hannah Lingen, a graduate of the NDSU IME program and current employee at Marvin Windows and Doors, was successful. Ethan found that they communicated well, shared similar expectations, and had common interests, leading to a productive mentorship.

Professional Growth One significant outcome of this collaboration was securing a Quality Engineering internship at Marvin. This opportunity expanded Ethan's professional network, knowledge, and experience beyond his initial expectations.

Gaining Confidence and Perspective Working with Hannah provided Ethan with several valuable insights and skills. She played a crucial role in boosting his confidence for the Career Fair and subsequent interviews. Additionally, she introduced him to new ways of problem-solving, encouraging a holistic approach. For example, in his Jig Design Project, Hannah's advice to consider ergonomics opened his eyes to important factors he had previously overlooked.

SPOTLIGHT...

Preparation for a Future Career The Industry Connections program has been instrumental in preparing Ethan for his future career in industrial engineering. It enhanced his professional communication skills, increased his confidence, and provided a clearer understanding of what employers seek in candidates.

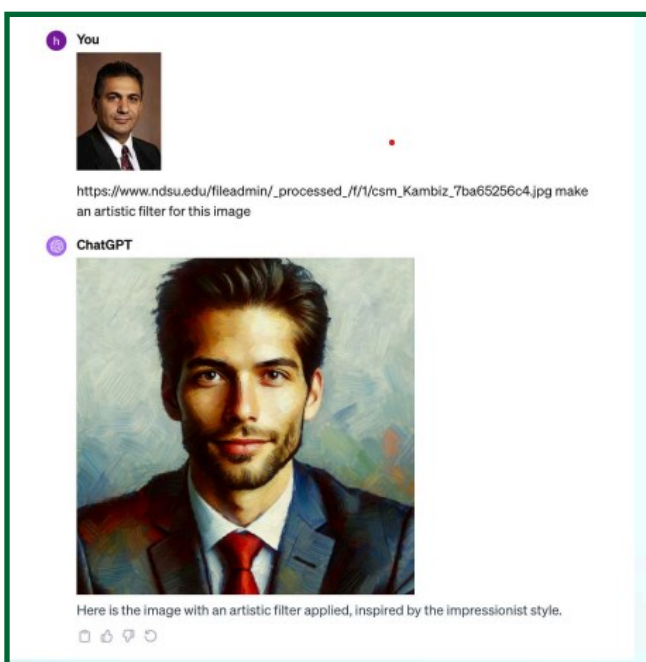
Recommendation for the Program Ethan recommends the Industry Connections program to all students. He believes that the effort and engagement one puts into the program directly correlate with the benefits gained. His advice to peers is to be confident, ask questions, and make an effort, as these qualities can significantly enhance their future prospects.

Suggestions for Program Improvement Ethan suggested that the program continue allowing freshmen to participate. Initially, this was not part of the plan, but low numbers led to invitations being extended to members of the ELLC. He feels that freshmen, in particular, can gain significant value from early exposure to the engineering field, hearing from professionals, and building long-lasting connections.

Conclusion The Industry Connections program has proven to accelerate professional and personal growth for Ethan Blesie. His story underscores the importance of mentorship, real-world experience, and proactive engagement in shaping a successful career. As the program continues to evolve, it promises to equip more students with the tools they need to thrive in the ever-changing landscape of industrial engineering.

AI Applications in the Manufacturing Industry

In January, Assistant Professor Dr. Harun Pirim delivered a presentation at the Minn-Dak Manufacturers Association Seminar focusing on AI applications in the Manufacturing Industry. The session offered a concise introduction to AI, featuring insights from leading experts in the field. Dr. Pirim showcased various use cases illustrating AI's transformative potential in manufacturing and highlighted effective strategies for integrating AI technologies to enhance industrial processes. The presentation material can be read [here](#).



One fun example from Dr. Pirim's presentation was the use of AI to generate images from word prompts or pictures. This blend of art and technology not only demonstrates the versatility of AI but also its potential for creative problem-solving in industrial contexts. Using advanced algorithms, AI can interpret textual descriptions or existing images and produce new, highly detailed visual representations. This capability has practical applications in design, marketing, and even in creating training simulations for manufacturing processes.

NOTEWORTHY HAPPENINGS....

CB² Spring Meeting

The 2024 IAB Spring Meeting was held on May 29 and 30 at Iowa State University in Ames, Iowa. During the meeting, faculty Principal Investigators (PIs) provided updates on their ongoing projects to IAB members, followed by Q&A sessions. In the afternoon, IAB members presented their Seed Concepts, creating discussions and potential collaborations. These Seed Concepts will form the basis for proposal submissions during the upcoming 2024 IAB Fall meeting, meeting location TBD.



Partnership and Collaboration: The meeting provided an opportunity for IAB members to revisit the Seed Concepts and engage in discussions. This session aimed to foster partnerships and collaborative efforts among IAB members, enhancing the potential impact of the Seed Concepts.

New Members to the Center: H.B. Fuller joined as a full member and Leistritz Extrusion joined as an affiliate member.



Stay tuned for more updates and exciting developments as we continue to drive innovation and collaboration at the CB² Center.



Institute of Industrial and System Engineers Conference

This year's IISE (Institute of Industrial and Systems Engineers) Annual Conference & Expo was held May 18-21 in Montreal, Canada. Dr. Kambiz Farahmand and Dr. Diana Lopez were both in attendance this year.

Sri Teja Garapati, a doctoral student in the IME department advised by Dr. Lokesh Narayanan, presented her research on the non-invasive and non-destructive zone-level determination of critical quality attributes (CQAs) such as cell functionality, cell health, and cellular viability for engineered tissue (ET). ET are becoming a potential alternative for treating diseases and testing new drugs. However, there are several limitations that need to be addressed before ET can become a mainstream alternative to animal testing. One of the limitations is the determination of cell health using sectioning and staining. In this method, the tissue is first sectioned into smaller pieces, later stained, and examined under a microscope. Sectioning and staining have been shown to have a significant effect on cell health in previous research.

To overcome this challenge, Sri's research focuses on Impedance Spectroscopy (IS) to determine the CQAs of an ET in a non-invasive and non-destructive manner. Existing IS research has shown that impedance matrix measurements such as impedance (Z), delta permittivity ($\Delta\epsilon$), and critical frequency (f_c) values can be used to determine the CQAs of an ET. Using this approach Dr. Lokesh and Sri have been able to design sensors that will be used to determine the CQAs in a non-invasive and non-destructive manner at a localized region level within an ET. The localized region-level CQAs determination will help understand the drug applicability for a specific disease when developing a new drug and also in drug progression studies.



Labiba Asha, Dr. Kambiz Farahmand, Sri Garapati

Congratulations to all of our Spring graduates!



Undergraduate Students

BS Industrial Engineering & Management

Benjamin S. Asheim
Zachary S. Buschena
Andrew P. Herrboldt
Courtney T. Halter
Anders B. Johnson
Benjamin J. Joy
Daniel J. Katzenmeyer
Megan R. LaLonde
Bryson K. Lund
Luke V. Nathe
Gabrielle E. Ott
Benjamin Ramler
Mitchell K. Rogers
Blake G. Schmidt
Jacob M. Schwarz
Matthew Scott

BS Manufacturing

Jacob R. Anderson
Henry L. Derks
James J. Frischman
Alexander T. Kleich
Wyatt S. Kluver

Click [Here](#) to view the Commencement Program

Watch the Commencement Ceremony:

2 p.m. ceremony: youtube.com/live/oGdPBWjeKP0

Graduate Students

Doctor of Philosophy

Katherine Roth

- *Industrial and Manufacturing Engineering*
"Implementing Industry 4.0: a Study of Socio-Technical Readiness Among Manufacturers in Minnesota and North Dakota"
- Advisor: Kambiz Farahmand



Katherine Roth, Ph.D.

Way
to go!

2024 SENIOR CAPSTONE PROJECTS...



IME students finished their senior capstone projects with a full morning of in-person presentations which were live streamed via Zoom. A big thank you to our sponsors and our judges, Greg Sandeno - IME alum, Clint Rossland-Sanford Health, and IME graduate student Paria Nourmohammadi. The winners were announced at the awards banquet held on April 25 at the Avalon Event Center where we had the pleasure of listening to our speaker, Greg Sandeno.



Luke Nathe, Brett Hertz, Matthew Scott, and Henry Derks

Congratulations to our first place winner, FAST Global Solutions, second place winner, Massman Automation, and third place winner, Collins Aerospace.

Automated Watering Dish



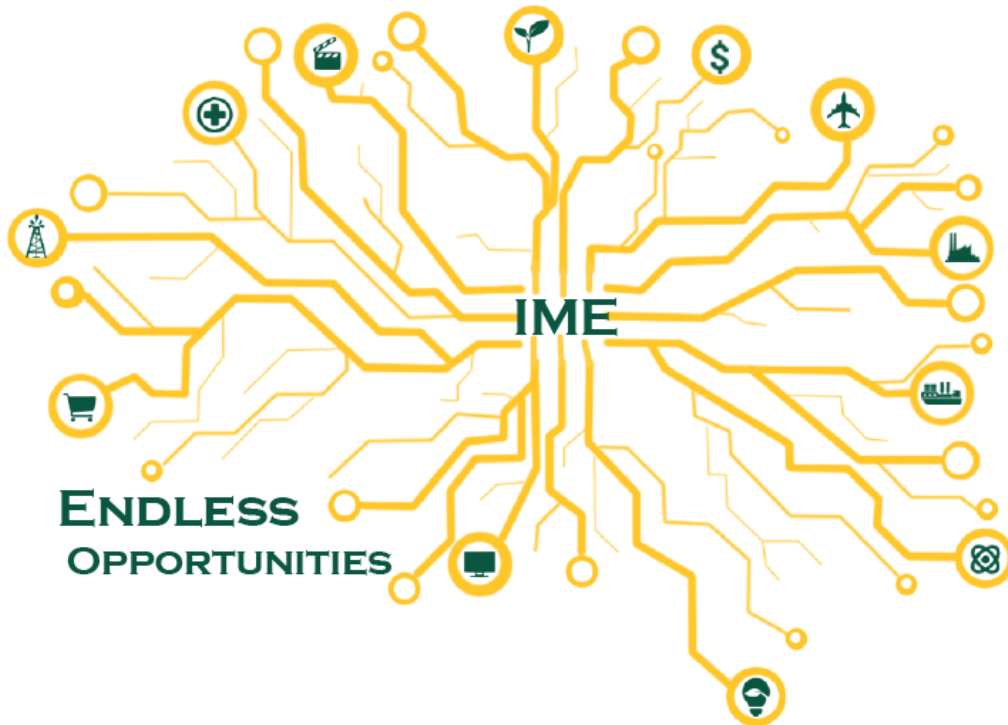
Talia Frahm, Jacob Schwarz, Benjamin Snyder, and Zach Buschena



Mason Heimkes, Emily Bjertness, Ben Asheim, and Alexander Kleich

2024 SENIOR CAPSTONE PROJECTS...

Company	Project	Students
Felling Trailers	Process improvement: Finished goods parts inventory	Wyatt Kluver, Courtney Halter, Zoey Schlanser, James Frischman
 FAST Global Solutions	Process improvement: Finished goods facility transfer	Brett Hertz, Henry Derks, Luke Nathe, Matthew Scott
 Massman Automation	Facility design/layout fiber optic laser installation	Benjamin Snyder, Zach Buschena, Jacob Schwarz, Talia Frahm
Textron (Arctic Cat)	Material flow optimization production & assembly line	Alyssa Miiller, Rylie Ringer, Mitchell Rogers, Ben Ramler
Sandy's Donuts	Lean manufacturing: Bakery production process	Chloe Aase, Alexander Gobran, Anders Johnson, Megan LaLonde
 Collins Aerospace	Material movement transportation analysis	Emily Bjertness, Ben Asheim, Mason Heimkes, Alexander Kleich
TEAM Industries	Process improvement: Forklift travel & chip removal	Jacob Anderson, Daniel Katzenmeyer, Noah Nadeau, Lily Zemke
Spectrum Aeromed	Facility layout: Process flow analysis of assembly line	Blake Schmidt, Bryson Lund, Andrew Herrboldt, Joseph Eisenberg



Looking for more information about the IME department
or past newsletters?

Check us out on our website at: [NDSU.edu/ime](https://www.ndsu.edu/ime)
Or follow us on Instagram!



Industrial & Manufacturing Engineering
NDSU Department 2485
1315 Centennial Blvd
Fargo, ND 58102

Phone: 701-231-9818
E-mail: kelly.schutt@ndsu.edu