

News & Updates

Department of Applied Engineering & Technical Management



Shaping Tomorrow's Workforce

\$44.8 million renovation of the UNI Applied Engineering Building will prepare future manufacturing, construction, technology education workforce

The effort to modernize the facility housing culminated in a major milestone in the summer of 2020. Several years of advocacy work from Iowa industry and professional organizations alongside the University of Northern Iowa resulted in a three-year, \$40.5 million commitment from the state legislature to modernize the Applied Engineering Building (AEB). The state's investment will fund construction costs, while a complementary \$4.27 million private fundraising campaign will furnish and equip the new facility, providing students access to technology-enhanced classrooms and labs.

"Modernizing our learning spaces is key to educating tomorrow's industry workforce, and we are pleased that the hard work of those advocating for this project paid off," said Lisa Riedle, Department of Technology head and professor. "We are excited for the future of this department and the impact our graduates will have on Iowa and beyond."

Over the past year, faculty and staff have been hard at work planning and designing the new facility with input from industry stakeholders. The project will renovate 52,000 square feet of the current AEB and expand the building by approximately 48,000 square feet of new construction. Groundbreaking on the project is slated for the spring of 2022.

Today's AEB

Built in 1974 largely to educate shop teachers, the AEB replaced Latham Hall as the home of the industrial arts program. The \$1.6 million project was envisioned to remedy lack of space, address outmoded labs and meet the demands of rising interest in the program.

Today, the AEB houses six programs within the Department of Technology enrolling nearly 400 students. UNI leadership expects a 20% enrollment growth as a result of the renovation project.

These future graduates will add to the more than 2,800 department alums who live and work in Iowa.



Among the department's academic offerings are the state's only Technology and Engineering Education program, which prepares teachers to lead industrial technology programs in schools across Iowa, and construction management programs that target a key workforce need across our state.

"Across industries, there's a huge demand for our students, and they have phenomenal records of career placement and starting salaries," Riedle said.

The Metal Casting Center, located in the AEB, is a nationally recognized leader in foundry research, applied technology, and technical business assistance. The UNI Foundation, which is coordinating the private fundraising campaign for the AEB, is collaborating with the Foundry Educational Foundation to raise funds for the Metal Casting Center.

A Facility for the Future

Modernizing the AEB will position the Department of Technology well within a changing industry environment, Riedle said. Longstanding labor shortages across a variety of sectors, including construction, manufacturing and engineering, have been exacerbated by the pandemic. Employers are seeking a pipeline of skilled workers to replace those who are retiring after long careers in their field.

Additionally, a broader industry shift in recent years toward automated manufacturing and machine learning capabilities are revolutionizing production – and thus, pre-professional preparation. The "fourth industrial revolution" or Industry 4.0, as the trend is often called, means graduates will need greater experience in robotics, among other technologies, Riedle said.

"Our current facility simply isn't fit to support this equipment, or the resulting changes to curriculum that we are envisioning," Riedle explained. "Modernizing our learning space is the first step toward where we want to be as a department."

Riedle said she values partnership from industry not only in securing state funding, but also in stepping up with philanthropic support for the project. UNI Foundation staff said the fundraising effort is approximately two-thirds of the way toward its goal thanks to the generosity of industry and individual donors.

Industry Investments Fuel AEB Campaign

Philanthropic gifts from manufacturing, construction leaders put project two-thirds of the way toward fundraising goal

Two of the University of Northern Iowa (UNI) Department of Technology's longstanding industry partners announced lead gifts to the Applied Engineering Building (AEB) modernization in 2021.

John Deere Waterloo, one of the largest recruiters of UNI technology department graduates, committed \$750,000 to the private fundraising campaign. The gift represents John Deere's single largest investment in UNI across 50 years as a key partner for the university. And Master Builders of Iowa, a leading professional organization for Iowa's construction industry, announced a \$250,000 gift to support the effort. For more than 40 years, MBI and its members have provided scholarships, program advisory and advocacy for UNI's construction management program.

In addition to the financial support, MBI — which represents more than 2,000 members — was a significant lobbying voice in helping to successfully move UNI's request through the legislative process.

"On behalf of the MBI Board of Directors and the MBI-WORKS Endowment Board of Directors, we are excited to support this critically important initiative at UNI," said MBI President and CEO Chad Kleppe.



"We're proud of our decades-long partnership with the students and faculty of UNI's Construction Management program and welcome the opportunity to help launch this campaign. Furthermore, we are pleased to be afforded the opportunity to help build upon the successes of the construction management program for the future of our workforce."

John Deere Waterloo leadership said their gift is an investment in tomorrow's workforce. "John Deere is excited to partner with the University of Northern Iowa on the renovation and expansion of the AEB. This modernization project aligns to the need for innovation and more advanced manufacturing technologies in our industry, which will also enable the future workforce."

UNI is the only public university in Iowa with these specific technology degrees, which is an important pipeline of talent for the Cedar Valley," said Becky Guinn, factory manager of Waterloo Works. "The Department of Technology specifically serves an important role in the state, as a large percentage of graduates continue employment in Iowa. John Deere's Smart Industrial strategy is committed to cutting edge technology which is just one of the reasons for this investment and our continued collaboration with UNI."



Molding Her Future in Metal Casting

A \$4.27 million private fundraising campaign for the Applied Engineering Building (AEB) modernization project will provide students in the Department of Technology with access to technology-enhanced classrooms and lab spaces, directly benefiting students like Maria Alverio.

Alverio recently graduated from UNI with a degree in manufacturing engineering technology and an emphasis in metal casting. She's now in her second year of grad school at UNI, where she's continuing her metal casting studies.

Sparking a passion

The first time Alverio stepped inside of the UNI Metal Casting Center, surrounded by the red-hot glow of molten metal, she knew she was hooked. "There are two types of people in this world: the type who see molten metal and run away, and the type who can't help but go closer. I'm definitely the second type," Alverio said.

Coming into college, Alverio never dreamed of doing this type of work. She had always been interested in history and intended to major in it, but fate had a different plan. "During my visit to UNI, there was a breakout session to tour the Department of Technology, and the Metal Casting Center," she said. "When they called that group, it felt as if I was being called to follow. I stood up, and my parents looked at me like, 'what are you doing?' But after that tour, and the first introductory course, I knew I had found what I wanted to do for the rest of my life."

Forging unique experiences

From day one, Alverio threw herself into the world of metal casting, and has never looked back. Over the course of her undergraduate career at UNI, she spent four years working at the UNI Metal Casting Center – one of the top institutions in the world focused on foundry research, with expertise in the specialty process of sand casting.

At the center, Alverio had the opportunity to work with organizations around the world to design, build and test metal casting materials, processes and molds, which were used by everyone from private companies to the U.S. military. She's melted iron, steel, aluminum, brass – and even a meteorite, which holds the spot as her most memorable casting experience so far.

"There was a meteor that had crashed in Russia, and a customer sent us parts of the meteor to melt down because they wanted to forge it into damascus knives," she said. "It was a pretty unique experience. The forging process can't be used until all of the non-metal portions are removed, and the meteorite is cast into blocks. When you melt a material like that, all of the chunks of earth that were embedded in the metal from the crash float to the surface as slag. Slag is the impurities in the melt that you wouldn't want in your final product. I actually kept some of the meteor slag, and still have it displayed on my bookshelf as a reminder of that experience."

Off campus, Alverio's time at UNI led her to other unique experiences. She completed two internships with top-rated foundries in the Midwest. Through the internships, she experienced what it was like to work both on the crowded floor of a foundry, and behind the scenes in the engineering offices.



Breaking the mold

When asked what it's like to be a female in a largely male-dominated field, Alverio says it doesn't really faze her. "When I walk into a room, it wouldn't be unusual for me to be one of a few women, or even the only woman," she said. "But I choose not to think about that. I just focus on the skills and knowledge of the craft."

Alverio says she's found connections with other women in the metal casting industry – including Shelly Dutler, a UNI Department of Technology alumna who now works as an engineer for a metal casting solutions company.

"I really look up to [Shelly]. She's highly respected in the industry," Alverio said. "I see her as sort of a mentor, and if I have questions, I ask her. I've also found ways to connect with other women in metal casting through LinkedIn and social media. There are plenty of women out there that I look up to."

Alverio says she's thankful to UNI and to her professors and supervisor for giving her the experiences she's had, and a place to find her passion. "UNI gave me a place to explore, and to ask questions, and to try new things," she said. "I've met some of my best friends here, and found amazing mentors. I'm so thankful for all of it."