

# NDSU ENGINEERING

NDSU seeks to meet North Dakota's workforce needs by recruiting and educating future generations of leaders in engineering, innovation, and entrepreneurship.

NDSU is the land grant university for North Dakota, and this heritage continues to be at the core of our mission. Originally signed into law by Abraham Lincoln, the Morrill Act created land grant universities to provide agricultural and engineering research and education throughout the country. Guided by this spirit, NDSU has been the state's leading provider of engineering research and education for more than 100 years.

The innovative and entrepreneurial ability of our graduates has led to technological revolutions in agriculture, energy, and infrastructure that have resulted in one of the strongest economies in the nation.

NDSU provides in-person, collaborative, interdisciplinary hands-on education to thousands of engineering students annually, contributing to the workforce needs of North Dakota. Industry leaders demand talent that learns in face-to-face collaborative learning environments. Online students account for less than 1% of enrollment in engineering and computer science programs at NDSU.

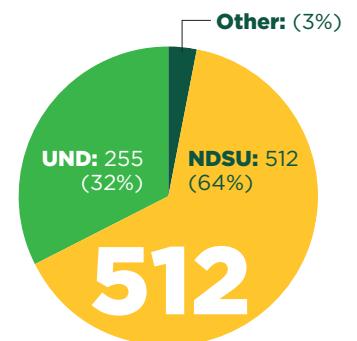
We seek growth in the following areas of high economic impact to the state, region, and world:

- Precision agriculture and autonomous systems**  
Designing the farm of the future that will improve the efficiency of food production for a growing global population.
- Energy stewardship**  
Harnessing our abundant resources in a manner that promotes the responsible and efficient generation, conversion, distribution, and storage of power and energy.
- Computer science, cybersecurity, and artificial intelligence**  
Providing advanced technological solutions for safety and security in a world that is becoming more driven by autonomous systems and marketplaces.
- Entrepreneurship and commercialization of new technology**  
Accelerating research to move innovative ideas from the laboratory into technology start-ups with solutions that benefit society.

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5,800

Job openings (in ND) requiring College of Engineering degrees (2022)



Engineering and Computer Science Graduates (2022)

80%

NDSU graduates from North Dakota who stay in North Dakota for their first job

41%

NDSU graduates from Minnesota who stay in North Dakota for their first job



A new engineering facility has been a capital project priority of NDSU since 2014, driven by increasing demands for graduates across the state and upper Midwest. Existing facilities are inadequate to meet the current and future workforce demands of the state. Laboratories are small, overcrowded, and oversubscribed for multiple purposes, resulting in safety concerns and inefficient utilization. Programs are spread out across campus, stifling collaboration in various disciplines. Student workspace is in short supply, limiting the design/build/test educational philosophy that we cultivate in our programs as demanded by our industry partners. We currently are at a serious disadvantage in attracting and retaining students who are needed to support workforce demands in high growth areas that have a critical economic impact on the state.

The space shortage has recently become more acute with the necessity to demolish the Agricultural and Biosystems Engineering Building due to safety issues, rising deferred maintenance costs, and accessibility limitations. This will create an even greater shortage of space for students and faculty working in the precision agriculture sector, an area of great importance to the state.

Accreditation visits as far back as 2012 have listed facilities as a concern, noting that limited space and overcrowded laboratories may limit the quality and capacity of our educational programs.

#### OPPORTUNITIES PROVIDED BY INNOVATIVE NEW LEARNING SPACE:

- Collaborative learning spaces that allow students to work together in multidisciplinary, team-based, face-to-face environments.
- Hands-on fabrication facilities and equipment for prototyping and testing products, devices, and systems.
- Modern educational laboratories with state-of-the-art testing facilities allow students to simulate real-world conditions using industry-standard equipment.
- Digital fabrication laboratories for rapid prototyping of engineering designs.
- Virtual reality studios allow students to simulate and test large-scale system designs in real time.
- Research facilities to expand our experimental capabilities in precision agriculture, autonomous systems, energy stewardship, cybersecurity, advanced materials, biomedical devices, among others. Dedicated research laboratories are needed to allow our faculty to remain competitive in attracting state, federal, and industry funding.
- A Center for Engineering Entrepreneurship and Innovation, highlighted by a technology acceleration center, will assist students and faculty to cultivate new ideas and facilitate commercialization of ideas into workable solutions and products for introduction into the marketplace. This center will help build new product development capacity and stimulate high-technology economic development in the state.