



Welcome to the University
of Akron:
Spotlight on the
College of Engineering and
Polymer Science.

Fall 2025 overview

October 29, 2024



ABOUT THE COLLEGE

- Department of Biomedical Engineering
- Department of Chemical, Biomolecular, and Corrosion Engineering
- Department of Civil Engineering
- Department of Computer Science
- Department of Electrical and Computer Engineering
- Department of Mathematics
- Department of Mechanical Engineering
- School of Polymer Science and Polymer Engineering

DEGREES (AA, BS, MS & PHD)

- Engineering – Biomedical (BS, PM, MS, PhD)
- Engineering – Chemical (BS, MS, PhD)
- Engineering – Civil (BS, MS, PhD)
- Engineering – Computer (BS, MS, PhD)
- Engineering – Electrical (BS, MS, PhD)
- Engineering – Mechanical (BS, MS, PhD)
- Polymer Science and Polymer Engineering (BS, PM)
- Polymer Engineering (MS, PhD)
- Polymer Science (MS, PhD)
- Mathematics – Applied Math (BS, MS)
- Computing – Computer Science (BS, MS)
- Computing – CIS Cybersecurity (BS)
- Computing – CIS Networking (A, BS)
- Computing – CIS Software Development (A, BS)
- Engineering Tech – Automated Manufacturing (A, BS)
- Engineering Tech – Construction (A, BS)
- Engineering Tech – Electrical and Electronic (A, BS)
- Engineering Tech – Mechanical (A, BS)
- Surveying & Mapping (A, BS)

A= associate BS = Bachelor of Science MS = Master of Science PM = professional Masters PhD = Doctoral

Our college is a home of top 10 highest paying college majors <https://www.newyorkfed.org/research/college-labor-market/index#/outcomes-by-major>

COMPUTER ENGINEERING

- BS, MS and PhD
- Students learn the same foundation in programming, operating systems, and computer systems that our computer science students do, while also studying circuits, electronics, and analog and digital hardware alongside our electrical engineering students.
- Research: in both electrical engineering and computer science.



COMPUTER INFORMATION SYSTEMS

- BS in Cybersecurity (#1 in Ohio)
- Certificate, AAB and BS in Networking
- Certificate, AAB and BS in Software Development

The Program offers high-level education and training for future IT professionals. Taught in cutting-edge computer labs, the CIS curriculum gives students the opportunity for specialization.

The 1st cybersecurity degree program in Ohio



COMPUTER SCIENCE

- Minor, BS and MS
- Students gain problem solving skills using software and modern computer systems, and develop core competencies in object-oriented programming, data structures and algorithms, computer systems software design & engineering, and operating systems.
- Research: database systems and applications, bioinformatics, software engineering, software development and evolution, static program analysis, artificial intelligence and machine learning, graph analytics and network analysis, high-performance computing, graphics, visualization and human-computer interaction.



POLYMER SCIENCE AND POLYMER ENGINEERING

- Minor, BS, MS and PhD
- The program builds a strong foundation in polymer chemistry, polymer physics, and polymer engineering with opportunities to specialize in sustainability, processing, or biomaterials.
- State-of-the-art processing facilities, access to the 25 polymer-related research labs, industrial collaborations with local polymer-focused companies, and a wealth of research opportunities.

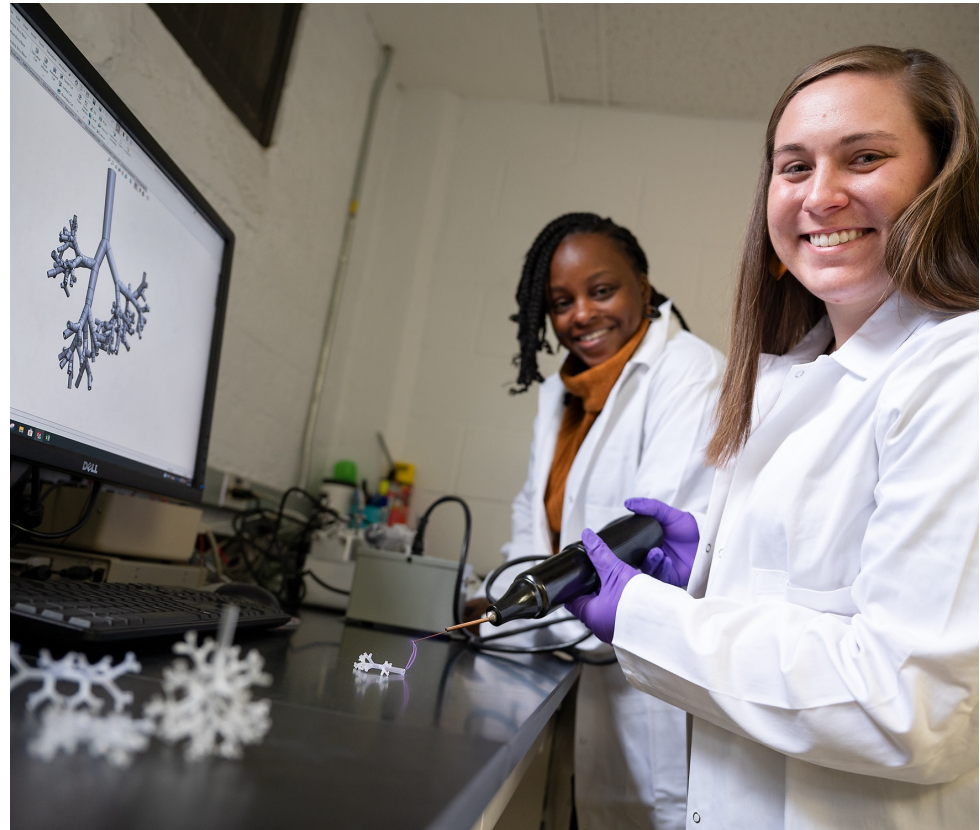
The University of Akron is **#1 in the U.S. for polymer science and plastics engineering***

7 *According to global ranking site EduRank, 2024



BIOMEDICAL ENGINEERING

- BS, MS, MBE and PhD
- The curriculum focuses on the design of medical devices and hands-on laboratory experiences to reinforce technical concepts from the classroom, field experiences and research opportunities.
- Research: tissue engineering (cancer, lung, cardiac), cell and tissue mechanics, gene and drug delivery, medical image and signal processing, microfluidics, wound healing, and human motion.



CHEMICAL ENGINEERING

- BS, MS and PhD
- Students learn how to apply fundamentals to meet the challenges of converting raw materials into marketable products that make our lives better.
- Research: engineering the molecules, materials, devices, and systems for solving chemical engineering problems and beyond in corrosion, energy, health, and sustainability industries.



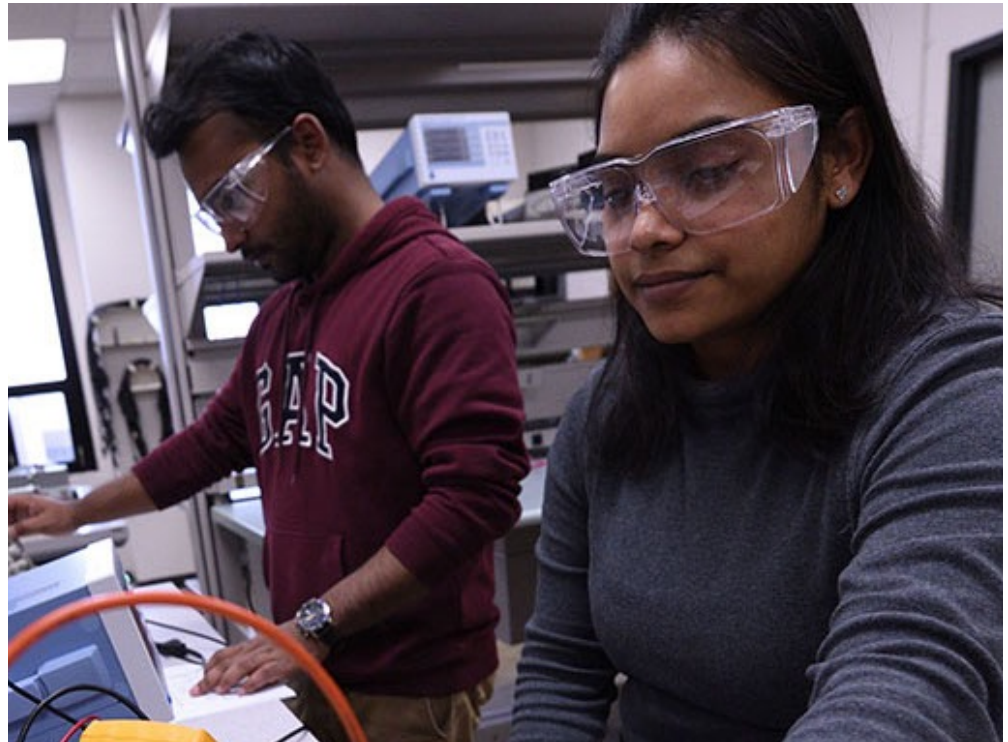
MECHANICAL ENGINEERING

- BS, MS, and PhD
- Students learn the basic principles of thermofluids, structures and motion, and control systems to develop solutions for real-world challenges, processes and products.
- Research: dynamics, vibrations and controls, fluid mechanics, heat transfer and energy systems, materials and manufacturing, solid mechanics, and systems engineering.



ELECTRICAL ENGINEERING

- BS, MS and PhD
- Students learn to identify, formulate, and implement solutions to real-world problems through comprehensive curriculum, high-quality labs, field experiences and research.
- Research: computational electromagnetics, cybersecurity and privacy, data analytics, AI applications, hybrid electric vehicles and alternative energy technologies, integrated circuits, intelligent sensor design and applications, power electronics and motor drives, renewable energy systems, robotics, signal processing, and wireless communications and networks.



CIVIL ENGINEERING

- BS, MS and PhD
- Students learn to plan and design large-scale projects like buildings and bridges; solve societal and environmental challenges; and design and maintain transportation systems.
- Research: highway and traffic engineering, designing and building bridges, buried structures, water/wastewater treatment, water and soil remediation, structural damage detection, and environmental impacts and pollution controls.



AUTOMATED MANUFACTURING ENGINEERING TECHNOLOGY

- AAS and BS
- Student learn all aspects of manufacturing including the analysis, design, and management of all the resources, facilities, and people involved in manufacturing processes. Industry-trained faculty teach computer-aided technologies, including CAD, CNC, and CAM.

New! Grand opening of **Center for Precision Manufacturing**



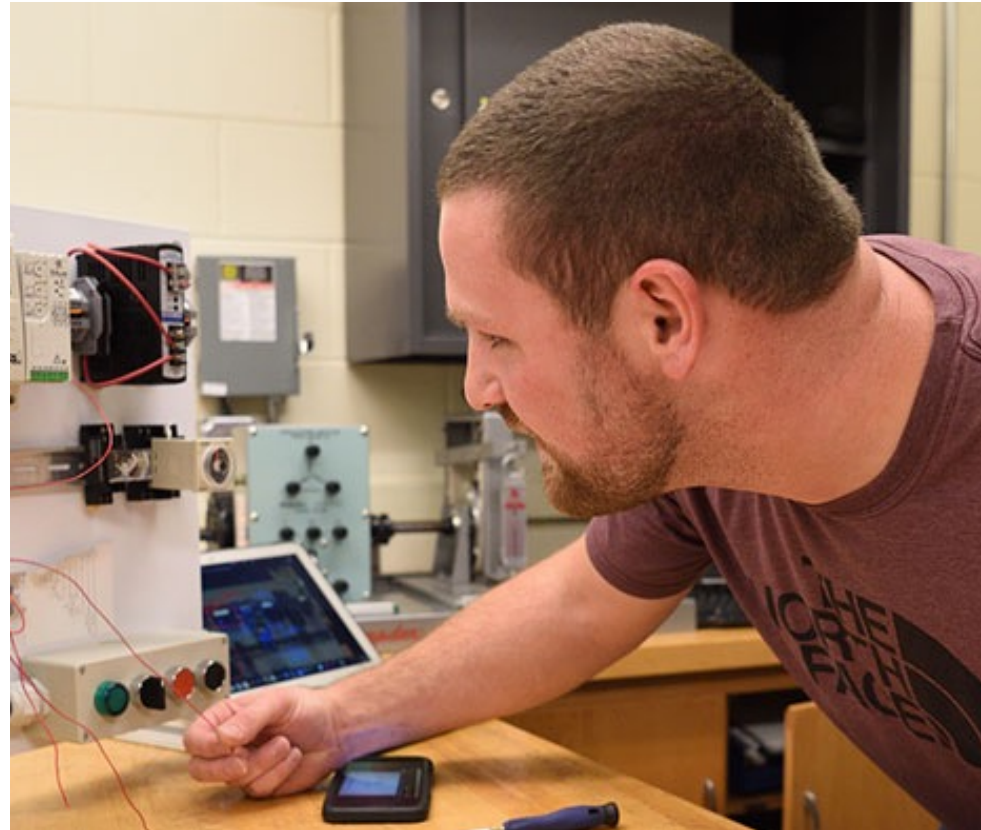
MECHANICAL ENGINEERING TECHNOLOGY

- AAS and BS
- Students learn to design, test, manufacture and service the mechanical components and systems found in all facets of industry through hands-on curriculum.



ELECTRICAL AND ELECTRONIC ENGINEERING TECHNOLOGY

- AAS and BS
- Faculty are expert practitioners
- The program embraces laboratory-based learning methods that prepares students for careers that utilize the newest technologies. Students take courses on microcontrollers, circuits, industrial machine control, writing technical reports, and more.



CONSTRUCTION ENGINEERING TECHNOLOGY

- Certificate, AAS and BS
- Faculty are professional engineers
- Students learn the latest in construction technology including building information modeling, contract law, project planning and scheduling, cost and quantity estimating, lean building science, and green and sustainable building practices.



SURVEYING AND MAPPING

- Certificate, AAS and BS
- Faculty are professional surveyors
- Students learn to manage geospatial data while using advanced technology including laser scanning, drones, precise satellite positioning, ground penetrating radar, and robotics.



APPLIED MATHEMATICS

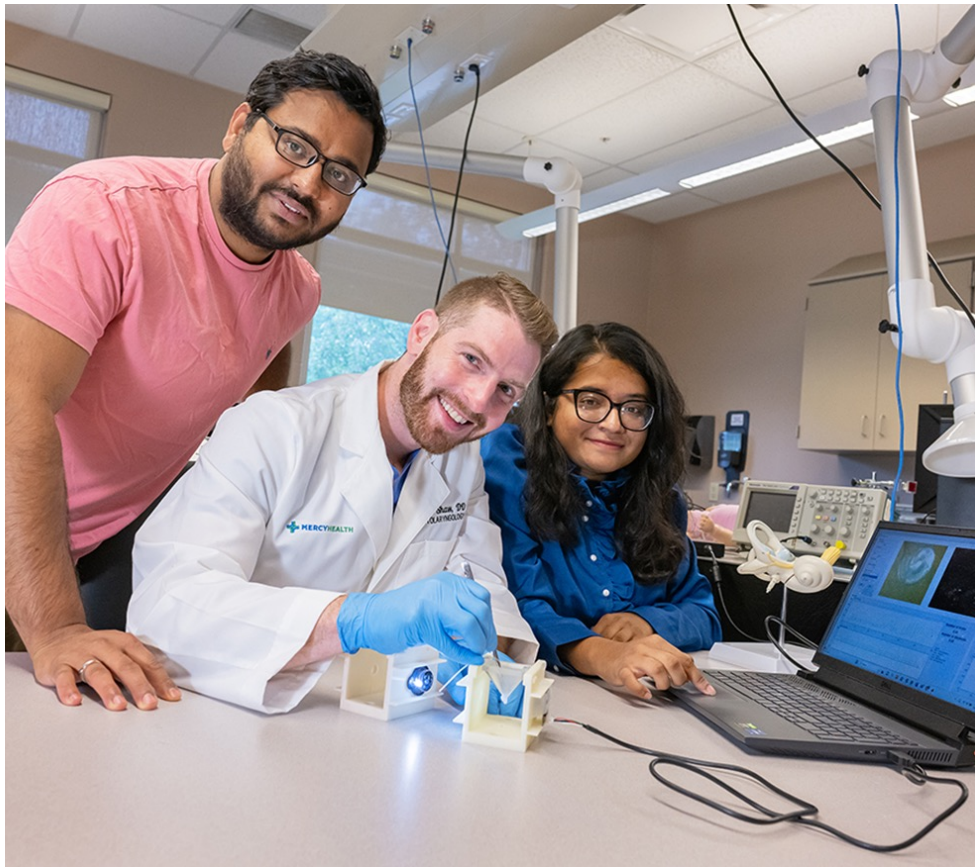
- Minor, BS and MS
- UA has a reputation for **excellence in applied sciences and engineering**. The Department of Mathematics builds on this tradition and focuses on a modern and practical approach to mathematics, combining theory and application with an emphasis on applied interdisciplinary mathematics.





ACCELERATED BS/MS DEGREE PROGRAMS

- Applied Mathematics
- Biomedical Engineering
- Civil Engineering
- Computer Science
- Mechanical Engineering



111-YEAR LEGACY IN HIGH-QUALITY PROGRAMS

- AAS/AAB, BS, MS, and PhD programs
- Eleven BS programs that carry ABET accreditation
- State-of-the-art research and teaching labs
- Faculty routinely acknowledged for excellence in their fields
- **#1** in polymer science and plastics engineering

RESEARCH

- Our students and faculty are shaping the future
- Students celebrate their research at department, UA and professional conferences
- The College is home to 10+ research centers/institutes



RESEARCH CENTERS, PT 1

The College of Engineering and Polymer Science maintains a rich network of centers, institutes, and research labs that combine faculty expertise with industry partnerships and student learning.

- **Akron Engineering Tribology Laboratory (AETL):** develops problem solving skills to address industrial friction and wear (tribology) problems. The AETL: Conducts industry standard and cutting-edge testing as a means to train students and solve compelling industrial problems
- **Akron Functional Materials Center:** drives polymer innovations to achieve commercialization. The current themes associated with the research clusters are biomaterials, coatings and adhesives, 3-D printing, polymer assembly, and energy/electronic.
- **Biomimicry Research and Innovation Center (BRIC):** a leader in the field of Biomimicry.
- **Center for Advanced Materials Performance (CAMP):** provides corrosion and materials performance solutions to industry and government organizations. The center is home to a multimillion-dollar suite of equipment to provide research, testing and analysis in many ways.
- **Center for Advanced Vehicles and Energy Systems (CAVES):** a leader in the creation of sustainable and clean energy sources. Specifically: power electronics, charging stations, battery management, bidirectional grid-interfaces, motor design, motor drives, hybrid and electric vehicles, wind turbines, solar energy, fuel cells, energy harvesting, control systems, and wireless embedded networked sensor design.

RESEARCH CENTERS, PT 2

The College of Engineering and Polymer Science maintains a rich network of centers, institutes, and research labs that combine faculty expertise with industry partnerships and student learning.

- **The Timken Foundation Center for Precision Manufacturing (CPM):** a research center focused around developing new finishing technologies for the manufacturing industry.
- **Center for Tire Research (CenTiRe):** a consortium of tire and tire-related industry members who offer technical advancement in the areas of tire and tire related materials, tire physics (including modeling), testing, manufacturing, and sustainability.
- **Coalescence Filtration Nanofibers Consortium (CFNC):** researches performance of coalescence filters and the design of filter media, including the development and application of nanofibers.
- **FirstEnergy Advanced Energy Research Center:** researches CO₂ capture and utilization, solid oxide fuel cells, natural gas utilization and storage, Li⁺/Al batteries, carbon-based functional materials, and photocatalysis to better understand the impact improved technologies have on our energy systems.
- **National Polymer Innovation Center (NPIC):** offers solutions in pilot-scale processing, surface and structural analysis, physical and chemical characterization

COOPERATIVE EDUCATION FOR UNDERGRADUATE STUDENTS

- The Co-op and Placement Program provides paid industry experience to undergraduate students in the College of Engineering and Polymer Science.
- We recommend that students complete their first five semesters of study in the classroom and then alternate a semester of paid employment with a semester of classroom study until their senior year. (see chart on next page).
- All UG I-20s are issued for 5 years to allow students to complete these valuable work experiences. CPT is required.
- Companies include *internationally known brands*: **J.M. Smucker Company, Sherwin Williams, and Goodyear Tire & Rubber Company**, to *local companies like*: **Swagelok, Parker Hannifin, and Pepperl + Fuchs**.
- \$21/hour average co-op wage
\$45K average total income for students with 3 co-op rotations!

COOPERATIVE EDUCATION FOR UNDERGRADUATE STUDENTS

	Fall	Spring	Summer
Year 1	Foundation Classes	Foundation Classes	Vacation/Class
Year 2	Foundation Classes	Foundation Classes	Vacation/Class/ Potential Co-op
Year 3	Core Classes	Co-op I	Core Classes
Year 4	Co-op II	Core Classes	Co-op III
Year 5	Senior Design and Elective Classes	Senior Design and Elective Classes	

CAREER PLACEMENT

- The Co-op and Placement Office helps students secure a **permanent, full-time job** for after graduation.
- 99 percent of spring 2023 engineering bachelor's degree recipients **participated in at least one form of experiential learning before graduating.**
- The average starting salary of UA engineering, engineering technology and computing UG degree recipients is **\$70,000.**

Some examples:

- **Chemical Engineering:** starting salary of \$73,000. Companies such as DuPont, Bridgestone Americas, Lubrizol, Sherwin Williams, Synthomer, and Westlake Chemical.
- **Biomedical Engineering:** starting salary of \$65,000. Companies such as Abbott, Boston Scientific, GE Healthcare, Lumitex, Parker Hannifin, PerkinElmer, STERIS and Zimmer Biomet.
- **Computer Science:** starting salary of \$70,000. Companies such as Cisco Systems, Diebold Nixdorf, FirstEnergy, The Goodyear Tire & Rubber Company, Intel, Progressive Insurance Company, Schaeffler and The J.M. Smucker Company.
- **Computer Engineering:** starting salary of \$72,500. Companies such as John Deere, Diebold Nixdorf, LTA Research and Exploration, Rockwell Automation, and Sanctuary Software Studios.

GRADUATE ADMISSION & DEGREE REQUIREMENTS

- Admissions
 - www.uakron.edu/graduate/admissions/apply
- PhD Degree (92-96 credits)
 - Courses plus research leading to a dissertation
- MS Degree (30-32 credits)
 - Thesis Option:
coursework plus research leading to a thesis
 - Non-Thesis Option:
courses plus a smaller project that demonstrates new knowledge creation
- Professional Masters Degree (30 credits)
 - Courses only



TEACHING AND RESEARCH ASSISTANTSHIPS

Some graduate students earn teaching and research assistantships.

- Includes stipend for 20 hours / week of work
- Has tuition remission (covering the tuition part of the bill; there are fees not covered).
- Only for students in research-focused programs (mostly for doctoral students; some MS with thesis students)
- Students wishing to be considered should indicate this on their UA graduate application and reach out to their department after they have been admitted.



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It is a great place to enjoy your time and learn a lot of things.
Situated in the suburb of **Northeast Ohio**, a great place to live
considering the cost and quality of living.

- Bipendra Basnet, PhD student

