Are you interested in being a part of an exciting and rapidly growing industry that is fun, creative, and literally changes the way the world operates? Did you participate in FIRST, VEX, or other robotics programs in high school? Kettering University is the perfect environment to help you expand those skills in your education and career.

Robotics offers innovators of all ages the opportunity to create, program, build, and dream. Designing, programming, building, and learning the movement of machines offers plenty of amazing career opportunities once those skills are nurtured in robotics programs at Kettering University. You will “turn pro” in robotics thanks to the multidisciplinary specialty that offers both theory in the classroom and hands-on experience with industry-standard tools in manufacturing systems, industrial design, and robotics, providing the broad-based engineering technology education required to solve applied engineering problems through design and analysis.

The Robotic pathways within the Electrical and Computer Engineering programs are designed to:

- Provide a focused set of elective courses in robotic studies that allow Electrical or Computer Engineering students to pursue their individual educational goals;
- Deepen and broaden students’ knowledge and skills in foundational robotics topics such as power electronics, digital signal processing, electrical machines, embedded control systems, autonomous mobility, and artificial intelligence;
- Provide robotic platform project-based learning opportunities that strengthen theoretical concepts in electrical and computer engineering;
- Build competencies in integrated electromechanical systems, algorithmic thinking, embedded system programming, interdisciplinary engineering design, project planning, teamwork, etc.

Robotics is a blend of engineering and science that includes mechanical engineering, electrical engineering, and computer science and programming. It is the field that sees the design, construction, operation and ultimately, the use of robots.
By studying robotics, students gain academic background that opens up dozens of opportunities that will satisfy their creativity, need for a challenge, and desire to change how industry operates, evolves, and makes the world a better place.

THE ELECTRICAL ENGINEERING PATHWAY IN ROBOTICS

An Electrical Engineering student following the pathway in Robotics must select six classes from the existing elective courses in the program curriculum; three EE elective courses in the areas of electric powered mobility, signal processing, and robot control; and three technical elective courses in the areas of robotic systems and autonomous mobility. No additional coursework beyond that required of other Electrical Engineering students is required. Electrical Engineering students pursuing a focused pathway in Robotics consult their academic advisors to carefully plan the selection and schedule for the required electives for the pathway.

ELECTIVE COURSES ALONG THE ROBOTICS PATHWAY

- EE 310 Circuits II
- EE 336 Continuous-Time Signals and Systems
- EE 338 Discrete-Time Signals and Systems
- EE 342 Electrical Machines
- EE 421 Energy Storage Systems
- EE 424 Power Electronics and Applications
- EE 432 Control System Analysis and Design
- EE 434 Digital Signal Processing
- EE 562 Robot Dynamics and Control
- IME 408 Industrial Robotics
- CE 420 Microcomputers II
- CE 426 Real Time Embedded Systems
- CE 442 Mobile Robotics
- CE 491 Special Topics: Artificial Intelligence for Autonomous Driving
- CE 491 Special Topics: Computer Vision for Autonomous Driving

POSSIBLE CAREER TRACKS

- Robotics Engineer
- Investigation Scientist
- Computer Programmer
- Technology/Management and Sales
- Product Development

A background in robotics leads to exciting career opportunities in a wide range of industries. Individuals working in the field create robots and robotics technologies help processes run more efficiently, cost-effectively, faster, and safer.

LEVELING UP YOUR SKILLS

Did you love being a part of robotics teams in high school? Did the adrenaline rush of robotics competitions thrill you? Kettering University offers plenty of extracurricular outlets to take these passions to the next level.

Can you see yourself programming an autonomous car? Kettering is one of only eight universities worldwide with an SAE Autonomous competition team, and all students are eligible to participate.

Robotics skills are also vital for our SAE clean snowmobile, aerodynamic design, Formula racing, and Baja dune-buggy competition teams and our Shell Eco-marathon team.

These teams build on the skills you learned in youth robotics, plug you into highly collaborative teams, and help you develop a valuable network that includes peers at other universities, faculty members who assist each team, and professional contacts from major global companies who support our teams.

HELP THE NEXT GENERATION OF ROBOTICISTS

Kettering University’s FIRST Robotics Community Center is the only facility of its kind on a college campus in the country. It houses eight high school teams as well as dozens of visiting teams throughout the year and hundreds of students of all ages for youth summer camps.

As Kettering students, the center also allows you the opportunity to stay involved in youth robotics programs as a mentor. You have the opportunity to share your experiences with teams and students, help them as they prepare for competitions, and remain connected to the dynamic, fun youth robotics culture through our resident teams.