

WANTED:

Future Autonomy Stack Engineers.

EE5531 Introduction to Robotics

Transform **raw sensor streams** into **autonomous movement**. You will build software to map environments, estimate position under uncertainty, and navigate physical platforms using algorithmic foundations standard in industry.



Built by students: 3D LiDAR map of Husky Plaza

■ Real robots

Clearpath Jackals and TurtleBot3s with LiDAR and IMUs. Not just simulation.

■ The math that makes autonomy work

Learn why we can trust autonomous systems: derive a Kalman filter and watch it correct a drifting robot.

■ The industry toolchain

ROS 2, Nav2, SLAM, Gazebo, Python, and Git. If you've read an AV job posting, you've seen this list.

■ A portfolio to make your resume stand out

Public GitHub repos with code, maps, and video. Exactly what today's employers expect.

THE COURSE FOLLOWS THE LOOP EVERY AUTONOMOUS SYSTEM RUNS

Observe

Measure how your LiDAR gets it wrong



Orient

Kalman filters and SLAM mapping on campus



Decide

Nav2 planners, costmaps, and recovery



Act

Your full stack on a Jackal, scored

— WHERE EE5531 ALUMNI WORK NOW —

maymobility

TORC



general motors



Qualcomm



JOHN DEERE

...and throughout the autonomy industry.

LECTURE Mon & Wed, 1:00–1:50 PM
PROJECTS Mon, 2:00–3:50 PM
CRN 12485 / 12486
PREREQS FOSS101 or equivalent experience
FOR MTU Robotics Engineering BS grads, and anyone with Linux, Python/C++, and Git experience.
CONTACT Dr. Jeremy Bos · jpbos@mtu.edu

Runs only with enough enrollment. Register early and bring a friend.

Scan for the full
course site

robust-autonomous-systems-
laboratory.github.io/ee5531

