

Syllabus

CS 3630 Introduction to Robotics and Perception

Georgia Tech Europe - Spring 2027

General Information

This course covers fundamental problems and leading solutions to autonomous robot navigation – what and how must a robot perceive the world, and how can it use that information to navigate effectively.

Objectives

Upon completion of this course, students will be able to:

- Describe and explain what robots are and what they can do
- Describe mathematically the position and orientation of objects and how they move
- Implement navigation and localization algorithms based on sensor fusion and environment representation
- Develop a control architecture for a mobile robotic system
- Write moderately involved programs in Python to control a robotic system
- Construct, program, and test the operation of a robotic system to perform a specified task

Prerequisites

No required course materials, but the course requires access to a computer. If you don't have access to a computer, please contact the instructor ASAP. All programming assignments will be completed in Python. The only formal prerequisite is CS1332 Data Structures & Algorithms. Prior knowledge of fundamentals of linear algebra and probability is helpful, but not required.

Background in AI and Machine Learning is not assumed.

Instructor

Stéphanie Aravecchia

Office: 100

Office Hours: 11:00-12:00 Tuesdays

Email: stephanie.aravecchia@georgiatech-europe.eu

Projects

You will do a lot of project work in this course. Some of the project will be only in simulation, some will be also implemented on real robotic platforms (Turtlebots).



Course Evaluation

The value of each assignment type is show below (subject to change):

Item	Totals
Projects	60%
Quizzes	30%
Participation	10%
TOTAL	100%

Academic Misconduct

Academic dishonesty will not be tolerated. This includes cheating, lying about course matters, plagiarism, or helping others commit a violation of the Honor Code. Plagiarism includes reproducing the words of others without both the use of quotation marks and citation. Students are reminded of the obligations and expectations associated with the Georgia Tech Academic Honor Code and Student Code of Conduct, available [here](#).