# COMP SCI 639 section 004 Syllabus

Undergraduate Elective Topics in Computing

## COURSE INFORMATION

### Course Information:

**Undergraduate Elective Topics in Computing**
COMP SCI 639 004 ( 3 Credits )
2025 Spring [1254]

**Description**
Selected topics in computing. Each offering of the course will cover a topic selected by the instructor. Offerings of this course will provide sufficient depth into their subject to count as electives to meet CS Major requirements.

**Prerequisite(s)**
None

**Instruction Mode**
Classroom Instruction

**Section Level Com B**
False

**Department:** Computer Sciences
**College:** Letters and Science

### Meeting Time and Location:

2025 Spring [1254]
**Term Start Date:** Tuesday, 21-Jan-2025 **Term End Date:** Tuesday, 13-May-2025

ADD TO CALENDAR

**Location and Schedule:** Computer Sciences 1257 TR 9:30 AM-10:45 AM
**CRN:** 865801254

### Instructor Information:

**Instructor**

Josiah HANNA
JPHANNA@CS.WISC.EDU

## Instructor Availability and Preferred Contact:

Office hours will take place on Tuesdays and Thursdays at 11am (immediately following lecture) in the instructor's office (CS 5391). Additional meeting times are available upon request (a brief email will suffice) and I am also willing to meet by Zoom if preferred.

## How Credit Hours are Met:

**How Credit Hours are Met**

The credit standard for this course is met by an expectation of a total of 180 hours of student engagement with the courses learning activities (45 hours per credit), which includes attending regularly scheduled lectures, programming and reading assignments, and in-class exams.

## Course Learning Outcomes (CLOs):

- Explain and implement algorithms that enable a robot to recognize the state of the world using its onboard sensors.
- Explain and implement algorithms that enable a robot to plan and enact movement in the world.
- Understand the broader landscape of advanced robotics topics: learning, HRI, and societal impacts.

# INSTRUCTOR to STUDENT COMMUNICATION

## Course Overview:

Robots are devices that sense and act to bring about change in the physical world. This course will introduce students to the challenges and methods for developing autonomous robots that can make decisions in unstructured environments with uncertain sensing and actuation. Topics covered will include probabilistic state estimation, robot localization, simultaneous localization and mapping (SLAM), motion control, planning, robot learning, and human robot interaction.

Students entering the class are expected to have a background knowledge of probability, linear algebra, and calculus, and have good programming experience. The course will provide minimal review on the background knowledge and will not provide tutorials on programming.

## Course Website and Digital Instructional Tools:

Course webpage: https://pages.cs.wisc.edu/~jphanna/teaching/2025spring_cs639/
Piazza: https://piazza.com/wisc/spring2025/cs639004/home
Canvas: https://canvas.wisc.edu/courses/448602

## Discussion Sessions:

We will use Piazza for asynchronous questions and discussions. Please follow these guidelines for Piazza:

1. Check if someone has posted the same / similar question before you.
2. Use an informative “Summary” line to help others.
3. If the answer to your question might help others, please make it a public question. Moreover, your classmates are a great resource and may be quicker to reply than the instructor.

## Required Textbook, Software and Other Course Materials:

Recommended (but not required):
1. Probabilistic Robotics. Thrun, Burgard, and Fox. MIT Press.
2. Introduction to Autonomous Robots: Mechanisms, Sensors, Actuators, and Algorithms. Correll, Hayes, Heckman, and Roncone. MIT Press.

## Homework and Other Assignments:

The course will require completion of regular reading and programming assignments. Reading and programming assignments will be submitted via Gradescope.

# EXAMS, QUIZZES, PAPERS, COURSE SCHEDULE and GRADING

## Exams, Quizzes, Papers and Other Major Graded Work:

There will be one midterm exam in the class which is worth 20% of the overall grade. The exam will cover course content until approximately Spring break. There will also be a final project that is assigned during the second half of the course. This project will be worth 20% of the total grade and will be due during the final week of class.

## Course Schedule/Calendar:

See course webpage: https://pages.cs.wisc.edu/~jphanna/teaching/25spring_cs639/schedule.html

## Grading:

In-class participation – 10%
Weekly Readings - 10 %
Midterm Exam - 20%
Final Project - 20%
Programming Assignments - 40%

Late Policy: All assignments are due when specified by the instructor. Late assignments will have 10% deducted for each 24 hours past the due date. This penalty is capped at 50% after which no credit is received except for weekly reading responses. Weekly reading responses may be turned in up to the final class day with a penalty of up to 50% off. In the event of illness or emergency that prevents an on-time completion, please contact the instructor prior to the deadline.

McBurney Center students should contact the instructor to specify any special requests for the exams or homework assignments together with the supporting documentation provided by the McBurney Center. I will do my best to accommodate the requests.

## ACADEMIC POLICIES and STATEMENTS

### Academic Policies:

**Syllabus Statements**

https://guide.wisc.edu/courses/#SyllabusStatements