Syllabus
CS 4023/5023 — Introduction to Intelligent Robotics — Fall 2025

Course Title:
Introduction to Intelligent Robotics

Instructor:
Dean Hougen, Sarkeys Energy Center 1176, Zoom, 405-325-3150, hougen@ou.edu

Teaching Assistants:
Shyam Sundar Murali Krishnan, Sarkeys Energy Center 1158, shyamkrishnan@ou.edu

Class Hours:
Monday, Wednesday, Friday 9:00-9:50, Sarkeys Energy Center M207, Zoom

Office Hours:
Dean Hougen:
Monday 1:00-2:30, Wednesday 10:00-11:00; REPF B4 (initially SEC 1176), Zoom
Shyam Sundar Murali Krishnan:
Wednesday 10:30-12:00; REPF B4 (initially SEC 1158)

Required Textbooks:
Each student is required to have their own copy of the following textbooks.
Required for both 4023 and 5023:
Springer Handbook of Robotics, Second Edition, Bruno Siciliano and Oussama Khatib (editors), 2016, Springer. (ISBN 978-3-319-32550-7; e-ISBN: 978-3-319-32552-1; DOI: 10.1007/978-3-319-32552-1)
Required for 5023:
Writing for Computer Science, Third Edition, Justin Zobel, 2014, Springer. (ISBN 978-1-4471-6638-2)
Students should read ahead the chapters and other materials that are expected to be covered in the class period (see the class schedule). Students should always bring their textbooks with them to class, including lectures/discussions, group work days, and exams.

Communication:
The primary means of transmitting class information to the students will be through announcements and discussions during class time and posts to Canvas. You are responsible for announcements made through either or both of these means.

The best way for students to communicate with the teaching staff is to come to scheduled office hours. If you cannot attend office hours in person, email can also be used but a quick or detailed personal response is unlikely as we get a **lot** of email and responding to email can be very time consuming. Students present in the classroom will get priority over emailed questions.

Students may communicate with one another using the discussion forums in Canvas or by other means outside of class as mutually agreed to by the students involved.

Details of all of the communication methods follow:
WWW:
Information about this class will be found on the class website. The URL is
http://www.cs.ou.edu/~hougen/classes/Fall-2025/Robotics/
This page will contain links to the directory of class materials and other important information.
Email:

Students should use the email addresses listed above. Note that we get a **lot** of email. Do not expect a reply in minutes; one or two days is more likely in most cases. If you have not heard back within five working days, please resend your message, if it is still relevant.

Expectations and Goals:

The prerequisites for this course are CS 2413 (Data Structures) and CS 2813 (Discrete Structures) or Math 2513 (Discrete Math) or instructor permission. You are expected to have a sufficient background in Computer Science to be able to support team projects involving robots. You are expected to have a working knowledge of a high-level object-oriented or imperative language, including a familiarity with its basic data types and control structures. A background in AI such as that provided by CS 4013 (Artificial Intelligence) may be useful but is not a requirement.

This course will introduce students to the state of the art in Intelligent Robotics and cover the principles involved.

Topics:

- History of Intelligent Robotics
- The Deliberative Paradigm
- Reactive Robots
  - Ethology for Roboticists
  - Architectures and Methodologies
  - Implementation
  - Sensing
- Hybrid Deliberative/Reactive Robots
- Multiple Robots
- Navigation
  - Topological Path Planning
  - Metric Path Planning
  - Localization and Mapping

Computer Accounts and Software:

All students in this class should have an account on the Computer Science Network (CSN). This will be used for writing and testing programs and sending and receiving materials electronically. Source code written for the projects **MUST** run on these machines. You may do your development work on whatever system you choose but it is your responsibility to ensure that your code runs on the CSN machines.

Requirements:

The graded assignments and their contribution to a student's grade are given in the table below. (Subject to change.)

Item	4023	5023
Exam (1)	20%	15%
Homework (6, drop lowest)	10%	5%
Group Project 1 (Simulation)	10%	5%
Group Project 2 (Real Robots)	10%	5%
Major Group Project	50%	50%
Technical Paper Reviews, Presentation, and Feedback	—	*20%*

All homework, exams, and technical paper projects in this course are to be done **ALONE**; the work submitted by a student **MUST** be the student's own.

Group work is **REQUIRED** for the projects; students will select their own groups and each group will give specific roles and tasks to its group members.

You are responsible for the material covered during the lecture sessions, whether or not it is also found in your textbooks or other assigned reading materials. Similarly, you are responsible for the material found in your textbooks and other assigned reading materials, whether or not it is also covered during the lecture sessions. In other words, you are responsible for the **UNION** of these sources of knowledge, as depicted by the entire shaded region of the Venn diagram below, not merely their intersection.
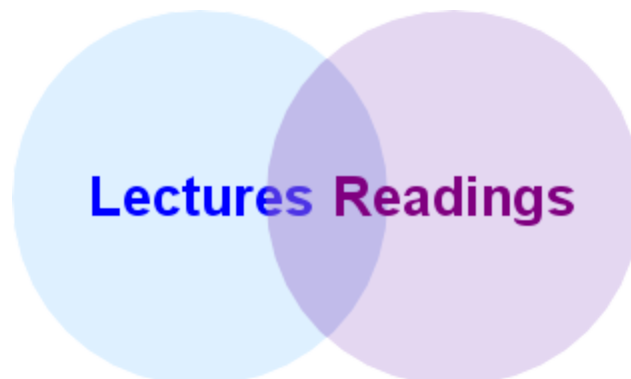
You may write your programs from scratch or may start from programs for which the source code is freely available on the web or through other sources (such as friends or student organizations). If you do not start from scratch, you **must** give a complete and accurate accounting of where all of your code came from and indicate which parts are original, which are changed, and which you got from which other source. Failure to give credit where credit is due is academic fraud and will be dealt with accordingly.

All work **must** properly cite sources. For example, if you quote a source in one of your technical paper reviews, you **must** include the quotation in quotation marks and clearly indicate the source of the quotation.

Late assignments will be penalized 20% per day late. (All parts of days will be rounded up.) After five days, you will not be able to turn in that assignment for credit. If you are worried about turning in the assignment late and losing points, turn in the assignment ahead of time. You will be turning in electronic copies of all projects and homeworks. (For projects, because they are to be done in groups, only one electronic copy needs be submitted per group regardless of the group size.)

All exams will be open book/open notes. **NO** electronic devices will be permitted in the testing area. (Note that we may be transitioning to electronic testing this semester. If that happens, then you will only be able to use a computing device running the approved software.)

Copying another's work, or possession of unauthorized electronic computing or communication devices in the testing area, is cheating and grounds for penalties in accordance with school policies.

Please see OU's academic integrity website.

Accommodations:
> Any student with a disability should contact the instructor so that reasonable accommodations may be made for that student.

Adjustments for Pregnancy/Childbirth Related Issues:
> Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see http://www.ou.edu/eoo/faqs/pregnancy-faqs.html for commonly asked questions.

Title IX Resources
> For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24.7,

counseling services, mutual no contact orders, scheduling adjustments and disciplinary sanctions against the perpetrator. Please contact the Sexual Misconduct Office 405-325-2215 (8-5) or the Sexual Assault Response Team 405-615-0013 (24.7) to learn more or to report an incident.

Drop Policy:

Any student who fails to attend the first week of class may be dropped from the class.

Holidays:

It is the policy of the University to excuse the absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays.

Related Documents:

Students should also read the related documents on Replacement Assignments or Extensions and Discussions of Scores and Grades.