SYLLABUS
ENGR 2194
Field Experience in Robotics Mentorship, 1-3 Credit Hours
Spring 2022

COURSE OVERVIEW

General information

Lecture: Certain Mondays, 7:00 PM – 7:55 PM, Baker Systems 130
Instructors: Dr. Ayonga Hereid (hereid.1), Dr. Saeedeh Ziaeefard (ziaeefard.1)
Email address: firstrobotics@osu.edu (Include ENGR 2194 in the subject)
Teaching assistants: Nishant Chittari (chittari.1), Alexis Ronnebaum (ronnebaum.2)
Office hours: By appointment (using CarmenZoom)

Course description

This course will support students to engage with FIRST robotics by supporting their development as mentors for K-12 robotics teams. Students will be paired with a local K-12 robotics team and be tasked with mentoring students the foundations of engineering, design, leadership, outreach, and teamwork. This class can be taken for 1, 2, or 3 credits. Repeatable up to 4 times, for a maximum of 12 credits.

Course learning outcomes

1. Develop and demonstrate effective mentorship skills
2. Gain experience with applying principles of engineering, science, and mathematics to basic robotics components
3. Communicate effectively with a range of audiences
4. Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
Course goals

1. Mentorship
   a. Students will adapt to different learning styles in mentorship
   b. Students will develop and demonstrate effective mentorship skills including facilitating team dynamics and creating a supportive and inspiring learning environment
   c. Students will discuss the benefits of robotics-based STEM education and university student mentorship for K-12 students

2. Robotics
   a. Students will identify and explain basic robotics components including wheels and drivetrain, motors and gears, sensors and wiring, robot programming, among others
   b. Students will offer accessible guidance when assembling robotics components

3. Interpersonal skills
   a. Students will utilize strategies for interpersonal connection
   b. Students will express empathy in engineering for effective mentorship, teamwork, and design

COURSE MATERIALS AND TECHNOLOGIES

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24x7.

- Self-Service and Chat support: http://ocio.osu.edu/selfservice
- Phone: 614-688-HELP (4357)
- Email: 8help@osu.edu
- TDD: 614-688-8743
REQUIRED SOFTWARE

**Microsoft Office 365**: All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft’s Student Advantage program. Full instructions for downloading and installation can be found [http://office365.osu.edu/](http://office365.osu.edu/).

LOCATION AND TRANSPORTATION

How students connect with a team

This course does not meet on a regular schedule; please see the course schedule for further details. There are **five (5) in-person class sessions** on campus, and these classes will be held at **Baker Systems 130**:

- Monday, January 10, 2022
- Monday, January 24, 2022
- Monday, February 21, 2022
- Monday, March 7, 2022
- Monday, April 11, 2022

Students are to be assigned a robotics team to mentor *prior to the start of class* via a survey and become connected with individual team coaches and teachers. **Students who graduated from a supported team must choose to mentor a different team.** Listed below are the teams that we support.

*FIRST* Robotics Competition (FRC)

- Grandview Heights High School (FRC Team 128 The Botcats)
- Columbus School for Girls (FRC Team 677 Murphy’s Outlaws)
- Dublin City Schools (FRC Team 1014 Bad Robots)
- Westerville Community Homeschool Team (FRC Team 1317 Digital Fusion)
- Metro Early College High School (FRC Team 3324 The Metrobots)
- Westerville High Schools (FRC Team 3591 Wild WarBots)
- Reynoldsburg High School (FRC Team 4085 Technical Difficulties)
- Worthington High Schools (FRC Team 4145 WorBots)
- St. Charles Preparatory School (FRC Team 4269 CardinalBots)
- Olentangy High Schools (FRC Team 4611 OZone Robotics)
- New Albany High Schools (FRC Team 5667 Digital Eagles)
- North Woods Career Prep High School (FRC Team 6916 Iron Thunder)
- Franklinton Prep Academy (FRC Team 6927 Franklinton Firebirds)
- Upper Arlington High School (FRC Team 6964 BearBots)
Any concerns about team placement before, during, or after the build season can be directed to the course instructors.

**Transportation**

Students will work with course instructors, other mentees, coaches, and teachers of the team to develop a transportation plan. Please reach out to the course instructors if you have any questions about how to get to your team's practices. We are happy to help you figure out a ride-share buddy, the COTA buses, and to connect you with a coach on your team. Let us know if transportation is a barrier for you - we are here to help you figure it out.

**HOMEWORK, LABORATORIES, GRADING AND FACULTY RESPONSE**

**How your grade is calculated**

<table>
<thead>
<tr>
<th>ASSIGNMENT CATEGORY</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time and activity log</td>
<td>65</td>
</tr>
<tr>
<td>In-class discussion</td>
<td>20</td>
</tr>
<tr>
<td>Final report</td>
<td>15</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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</tbody>
</table>

*See course schedule, below, for due dates.*

**Assignments (category)**

**Time and activity log:**

Students can choose to take the course for 1, 2, or 3 credit hours. Students are asked to mentor for 20 hours for every credit enrolled. These hours and mentor activities are logged monthly and must be approved by a team teacher or coach. Attending official FIRST competitions with a team is not required, but highly encouraged.

**In-class discussions:**

Students will participate in in-person discussions to encourage collaboration and discussion between robotics teams. These discussions are infrequent; see the course schedule for more details on frequency. Some example discussion topics could be the current season’s game
manuals, team awards and recognitions, and technical hardware and software support. The in-person discussions are a place for students to connect with each other, and, by extension, other teams. The discussions are ultimately a place for students to talk about what is most relevant to their team and season so the topics may fluctuate based upon what information seems to be the most useful.

**Final report:**
Students will write a short report that describes their experiences on the team and growth as a mentor.

**Late assignments**
All assignments should be turned in before the beginning of class on the due dates specified on Carmen. Submission methods will be communicated by the instructors. Acceptance of late submissions must be communicated with the instructors. Please check with us as soon as possible if you think that you will miss an assignment deadline.

**Grading scale**

- 93–100: A
- 90–92.9: A-
- 87–89.9: B+
- 83–86.9: B
- 80–82.9: B-
- 77–79.9: C+
- 73–76.9: C
- 70–72.9: C-
- 67–69.9: D+
- 60–66.9: D
- Below 60: E

**Instructor feedback and response time**

We are providing the following list to give you an idea of our intended availability throughout the course. (Remember that you can call 614-688-HELP at any time if you have a technical problem.)

- **Grading and feedback:** For large weekly assignments, you can generally expect feedback within 7 days.
- **E-mail:** We will reply to e-mails within 24 hours on school days.
COURSE MEETINGS, PARTICIPATION AND ATTENDANCE

Student participation requirements

Attendance and participation are critical for your success in this course. If you have a situation that might cause you to miss class, discuss it with me as soon as possible. The following is a summary of everyone's expected participation:

- **In-person attendance**
  Students will participate in in-person discussions 5 times in the semester to encourage collaboration and discussion between robotics teams.

- **Mentorship participation**
  Students can choose to take the course for 1, 2, or 3 credit hours. Students are asked to mentor for 20 hours for every credit enrolled. These hours and mentor activities are logged monthly and must be approved by a team teacher or coach. Attending official FIRST competitions with a team is not required, but highly encouraged.

We will have frequent opportunities to discuss course topics in class. Students will be coming into the class with a wide range of experiences and thoughts about mentorship and robotics. Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably.

OTHER COURSE POLICIES

Academic integrity policy

POLICIES FOR THIS COURSE

- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should follow MLA style to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in--but no one else should revise or rewrite your work.

- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.

- **Falsifying research or results**: All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your
library research look more successful than it was. If you are having trouble with an assignment, please come see me.

- **Collaboration and informal peer-review:** The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.

**OHIO STATE’S ACADEMIC INTEGRITY POLICY**

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University’s *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University’s *Code of Student Conduct* and this syllabus may constitute “Academic Misconduct.”

The Ohio State University’s *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University’s *Code of Student Conduct* is never considered an “excuse” for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University’s *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages ([COAM Home](https://coam.osu.edu/))
- *Ten Suggestions for Preserving Academic Integrity* ([Ten Suggestions](https://coam.osu.edu/ten-suggestions))
- *Eight Cardinal Rules of Academic Integrity* ([www.northwestern.edu/uacc/8cards.htm](https://www.northwestern.edu/uacc/8cards.htm))
Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu

Your mental health

A recent American College Health Survey found stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other and alcohol use among the top ten health impediments to academic performance. Students experiencing personal problems or situational crises during the semester are encouraged to contact the College of Pharmacy Office of Student Services in room 150 Parks Hall (614-292-5001) OR OSU Counseling and Consultation Services (614-292-5766, https://ccs.osu.edu/) for assistance, support and advocacy. This service is free and confidential.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let us know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, plan as soon as possible to discuss your accommodations with us so that they may be implemented in a timely fashion.

SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.
COURSE SCHEDULE

For specific deadlines and due dates, please see the course Carmen page. Schedules between students will vary depending on the schedule of the robotics team being supported.

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<thead>
<tr>
<th>Date</th>
<th>Topics / Events</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>January 8, 2022</td>
<td>FIRST Robotics Competition Kickoff (at PAST Foundation)</td>
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<tr>
<td>(Optional, but highly</td>
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<td>recommended)</td>
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<tr>
<td>January 10, 2022</td>
<td>In-person class</td>
<td>Due January 17:</td>
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<tr>
<td>(Required)</td>
<td>- Syllabus review</td>
<td>• New mentor training</td>
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<td>- Introduction to K-12 educational robotics programs</td>
<td>• Youth protection screening</td>
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<td>January 24, 2022</td>
<td>In-person class</td>
<td>Due February 4:</td>
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<tr>
<td>(Required)</td>
<td>- Mentor check-in</td>
<td>• January time and activity log</td>
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<td>- DEI, marketing, and outreach</td>
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<td>February 21, 2022</td>
<td>In-person class</td>
<td>Due March 4:</td>
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<tr>
<td>(Required)</td>
<td>- Testing and quality assurance</td>
<td>• February time and activity log</td>
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<td>March 7, 2022</td>
<td>In-person class</td>
<td>Due April 1:</td>
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<tr>
<td>(Required)</td>
<td>- Mentor check-in</td>
<td>• March time and activity log</td>
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<td></td>
<td>- Competition preparedness</td>
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<td>March 17, 2022 – March 19, 2022</td>
<td>Greater Pittsburgh Regional (at Convocation Center at California University of Pennsylvania)</td>
<td>Due April 25:</td>
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<td>(Optional, but highly recommended)</td>
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<td>• April time and activity log</td>
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<tr>
<td>March 24, 2022 – March 26, 2022</td>
<td>Buckeye Regional (at Wolstein Center at Cleveland State University)</td>
<td>• Final report</td>
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<td>(Optional, but highly recommended)</td>
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<td>April 11, 2022</td>
<td>In-person class</td>
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<tr>
<td>(Required)</td>
<td>- Mentor check-in</td>
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<td></td>
<td>- Offseason plans</td>
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<tr>
<td>April 27, 2022 – April 30, 2022 (Optional, during final exams)</td>
<td>FIRST Championship (at TCF Center in Detroit, MI)</td>
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