Robotics in the World (PS)

ENGR - 1070 001

Course Description

Robotics technology influences every aspect of work and home life. This technology, a cornerstone application of physical laws, has evolving usage in many fields that will be discussed in this class such as: healthcare, agriculture, aerospace, business, and everyday society. This course also introduces students to the basic concepts of programming robotics.

Semester(s): All

Course Student Learning Outcomes

- Apply physical science principles to describe behaviors and characteristics of robotics.
- Investigate current applications of robotics in engineering, chemistry, physics and biology.
- Recognize tools and processes used in the field of robotics while visiting a robotics facility.
- Differentiate between realistic outcomes achievable with robotics and the speculative outcomes described in science fiction.
- Evaluate the potential and dangers of robotics.
- Demonstrate proficiency in the use of databases to obtain published scientific information for inclusion in research papers and class presentations.
- Use the scientific method while participating in a final group project programming their own robot.

General Education Information

PS

This course fulfills the above requirement for the General Education Program at Salt Lake Community College. It is designed not only to teach the information and skills required by the discipline, but also to develop vital workplace skills and to teach strategies and skills that can be used for life-long learning.

General Education courses teach basic skills as well as broaden a student's knowledge of a wide range of subjects. Education is much more than the acquisition of facts; it is being able to use information in meaningful ways in order to enrich one's life.

While the subject of each course is important and useful, we become truly educated through making connections of such varied information with the different methods of organizing human experience that are practiced by different disciplines. Therefore, this course, when combined with other General Education courses, will enable you to develop broader perspectives and deeper understandings of your community and the world, as well as challenge previously held assumptions about the world and its inhabitants.

Engagement Plan

Example language:

- The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.

Keys for Success (how to succeed in the course)

For students to be successful in this course, the following actions and student engagement activities are strongly recommended and encouraged:

1. Attend class, take notes, and participate in class activities. Complete all your assignments, and do your best.

2. Read and study the lecture notes, slides, and the relevant handouts.

3. Dedicate at least three hours outside of class for assignments for every one hour spent in class.

4. Use the STEM Learning Resource Center for free tutoring. See their hours here: https://www.slcc.edu/stem/tutoring/stem-learning-resources-hours.aspx

5. Do not hesitate to ask questions.

6. Turn on your Canvas Notifications so that when announcements are posted about the course you get notified immediately.

7. Be familiar with the late policy for this course.

Required Text or Materials

Title: There will be no textbook for this course. Regular assignments will often include readings, which will be provided as needed.

For more information on textbook accessibility, contact Accessibility & Disability Services at ads@slcc.edu.

Brief Description of Assignments/Exams

HOMEWORK:

Each homework assignment will be unique, so please pay attention to the individual requirements. Professional, well-organized, and complete assignments are required for full credit. Homework due dates are given in Canvas. Late homework is penalized 20% until one week after its due date. Then it will not be accepted beyond that point in order to help students stay up-to-date.

EXAMS:

Exams may include a mixture of exercises and questions that will assess how well you understand and can apply the concepts and skills that are covered throughout the course.

If you will be absent on the date of an exam is due, it is your responsibility to let me know beforehand, and we can make alternative arrangements.

GRADING:

Grading for this course is divided into the following components:

15% in-class discussions

10% technical paper presentations

10% Final/Signature project

40% exams

25% lab assignments

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
1/23/24	Technical Paper Research	Discussion	10
1/23/24	Week 2 Class Notes: Library Research	Assignment	10
1/30/24	Week 3 Class Notes: Science Fiction	Assignment	10
2/6/24	Week 4 Class Notes: Manufacturing	Assignment	10
2/13/24	Exam 1 Review	Assignment	10
2/13/24	Week 5 Class Notes: Automotive	Assignment	10
2/14/24	Exam 1	Assignment	100

Due Date	Assignment Name	Assignment Type	Points
2/27/24	Week 7 Class Notes: Aviation	Assignment	10
3/5/24	Week 8 Class Notes: Order Fulfillment	Assignment	10
3/12/24	Week 9 Class Notes: Space Exploration	Assignment	10
3/19/24	Week 10 Class Notes: Biotechnology	Assignment	10
3/26/24	Exam 2 Review	Assignment	10
3/28/24	Exam 2	Assignment	100
4/2/24	Week 12 Class Notes: Agriculture	Assignment	10
4/11/24	Lab Assignment 8: 3D Printing Basics	Assignment	10
4/16/24	Week 14 Class Notes: Medical	Assignment	10
4/23/24	Final Exam Review	Assignment	10
4/25/24	GE Signature Assignment and GE Reflection	Assignment	100
4/25/24	Technical Paper Presentation	Assignment	50
4/28/24	Lab Extra Credit: 3D Printing Design	Assignment	10
4/30/24	Final Exam	Assignment	100
1/17/25	Voltage	Assignment	10
1/24/25	Ohms Law	Assignment	10

Due Date	Assignment Name	Assignment Type	Points
1/31/25	DC Circuits	Assignment	10
2/7/25	Oscilloscopes	Assignment	10
2/21/25	Capacitors	Assignment	10
2/28/25	Diodes	Assignment	10
3/28/25	Transistors	Assignment	10
4/18/25	Micro Controller	Assignment	10
9/3/25	Week 1 Class Notes: History of Robotics	Assignment	10
9/9/25	Lab Assignment 1: Circuits and Schematics	Assignment	10
10/1/25	Software Download	Assignment	10

Grading Scale

A 93-100
A- 90-92
B+ 87-89
B 83-86
B- 80-82
C+ 77-79
C 73-76
C- 70-72
D 61-69
E <60

How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the Institutional Syllabus page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the Institutional Syllabus page under the Tutoring and Learning Support tab. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, visit the Institutional Syllabus page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar