CISC1003 – Explore Robotics   Fall 2021

Course Information:

Instructor Information:

- Prof. Tzipora Halevi
- Ingersoll Hall 2156A
- halevi@sci.brooklyn.cuny.edu
- Office hours: Tuesdays, Thursdays 3.30 pm – 4.30 pm and by appointment.

Online Course Webpage: http://thalevi.github.io/CISC1003

Hours and location:

M 06:30-09:15PM   Online
                               You can find the link to the Zoom session on BlackBoard.

Course Description:

Introduction to programming through the use of project-based educational robotics activities.
Small group work on a series of multi-week creative projects involving use of robots.
Address meaningful and socially important issues, such as urban search and rescue or elder care.
Introduction to the fundamentals of robotics (including aspects of mechanical design)
and elementary programming within a graphical environment. [Not open to students who are
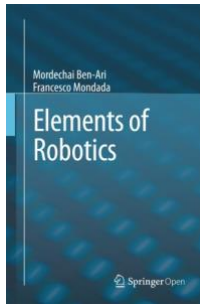enrolled in or have completed CORC3303].

Objectives of this core course:

- Students will be able to address robotics performance questions through student-designed
  empirical studies.
- Students will be able to develop and test programs for real-world situations.
- Students will be able to form and test hypotheses by developing programs, observing
  results and modifying the programs to achieve desired results.
- Students will be able have their programs integrate knowledge from a variety of robot
  sensors to formulate a plan of action for the robot.
- Students will be able to analyze issues involving development and use of robots in
  modern society.
- Students will be able to demonstrate effective work on a team or in a working group.
- Students will be able to describe technical work orally and in writing.

Course Requirements:

Textbooks:

Elements of Robotics

https://link.springer.com/book/10.1007/978-3-319-62533-1

Direct Download Link:
https://link.springer.com/content/pdf/10.1007%2F978-3-319-62533-1.pdf

Introduction to Autonomous Robots, Nikolaus Correll
v1.9, March 6, 2020
Magellan ScientificISBN-13: 978-0692700877
Direct Download Link:
https://github.com/correll/Introduction-to-Autonomous-Robots/releases/download/v1.9.2/book.pdf

The Robotics Primer
by Maja Mataric
Publisher: The MIT Press (September 30, 2007)
ISBN-10: 026263354X
ISBN-13: 978-0262633543

Online Environment:

We will be using VEXcode VR online environment:

www.vexrobotics.com/vexcode-vr

Course Structure:

6 Units (consisting of):

- 1-2 lectures, 2 online lectures via Blackboard
- Work in virtual lab environment
- 1-2 assessment assignments (HWs, quizzes, classroom demonstrations)

Grading = Programming – labs & assignments (50%) + Final (30%) + (quizzes) (10%) + Hw(10%)

Slides, assignments, and readings will be posted on the course blackboard site. The course will also have a blackboard site with a dropbox for each assignment, grades, and announcements.

Course Outline:

Unit A: Introduction to Robotics: technical and societal issues. Introduction to the vexcode-vr virtual programming environment.

Unit B: Simple go-bots: motors and motion. Introduction to building blocks and basic concepts of robot programs.

Unit C: Dancing go-bots: event driven motion using one sensor. Introduction to the different robot sensors functionality and programming. Robot locomotion mechanisms.

Unit D: Complex motion using multiple sensors. Robots control mechanisms. Examine urban search and rescue using robots. Degrees of freedom of a robot.

Unit E: Multiple robot activities in a complex environment. Interactive robot programming using wide selection of the robot functions. Introduction to programming basics, pseudocode and flowcharts.

Unit F: Search and rescue teams – robots work together in a complex environment dynamic. Examine challenges, coordination, communication and control.

Course Behavior

What you can expect for the semester.: I will be present online in the course and maintain a civil learning environment for all students. I will respect you and your opinions. I expect you to do the same, showing respect to your fellow colleagues and the class, both by showing up to the zoom lecture and by respecting other participant's opinions

You are expected to do your own work. Cheating, plagiarism, and any other form of academic dishonesty will not be tolerated and will result in failing grade for the work submitted, as well as reporting the student to the Academic Integrity Office, which may result in disciplinary actions for the students.

Meaningful and constructive dialogue is encouraged in this course and requires a willingness to listen, a tolerance for different points of view, and mutual respect from all participants. Participants should refrain from negative or critical comments, and discussion should typically concentrate on the technical aspects of the topics.

Attendance at live sessions is a necessary part of this course; therefore, you are expected to show up for class on zoom. If you have any issue that prevents you from sharing your video on zoom, please email me or communicate it to me during office hours or after the class.

University Policy on Academic Integrity:

The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for policy implementation can be found at www.brooklyn.cuny.edu/bc/policies. If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member MUST report the violation. Students should be aware that faculty may use plagiarism detection software.

Center for Student Disability Services:

The Center for Student Disability Services (CSDS) is currently working remotely. In order to receive disability-related academic accommodations students must first be registered with CSDS. Students who have a documented disability or suspect they may have a disability are invited to schedule an interview by calling (718) 951-5538 or emailing testingcsds@brooklyn.cuny.edu. If you have already registered with CSDS, email Josephine.Patterson@brooklyn.cuny.edu or testingcsds@brooklyn.cuny.edu to ensure the accommodation email is sent to your professor.

Non-Attendance because of religious beliefs:

The New York State Education Law provides that no student shall be expelled or refused admission to an institution of higher education because he or she is unable to attend classes or participate in examinations or study or work requirements on any particular day or days because of religious beliefs. Students who are unable to attend classes on a particular day or days because of religious beliefs will be excused from any examination or study or work requirements. Faculty must make good-faith efforts to provide students absent from class because of religious beliefs equivalent opportunities to make up the work missed; no additional fees may be charged for this consideration.

If classes, examinations, or study or work requirements occur on Friday after 4 p.m. or on Saturday, similar or makeup classes, examinations, or study or work requirements will be made available on other days, where possible and practical. The faculty and the administration will not allow any adverse or prejudicial effects to accrue to students availing themselves of this regulation. If students have complaints about the application of this policy, they are entitled to bring action or a proceeding for enforcement of their rights in the Supreme Court of Kings County.

The New York State Education Law provides that no student shall be expelled or refused admission to an institution of higher education because he or she is unable to attend classes or participate in examinations or study or work requirements on any particular day or days because of religious beliefs. Students who are unable to attend classes on a particular day or days because of religious beliefs will be excused from any examination or study or work requirements. Students absent from class because of religious beliefs will be provided with equivalent opportunities to make up the work missed; no additional fees may be charged for this consideration.

More information can be found at:
http://www.brooklyn.cuny.edu/web/off_registrar/2020-2021_Undergraduate_Bulletin.pdf

Student Bereavement Policy:

Students who experience the death of a loved one must contact the Division of Student Affairs, 2113 Boylan Hall, 718.951.5352, studentaffairs@brooklyn.cuny.edu, if they wish to implement either the Standard Bereavement Procedure or the Leave of Absence Bereavement Procedure (see below). The Division of Student Affairs has the right to request a document that verifies the death (e.g., a funeral program or death notice).

Typically, this death involves that of a family member, in parallel to the bereavement policy for faculty and staff. However, it is up to the discretion of the Division of Student Affairs to determine if a death outside of the immediate family warrants implementation of the student bereavement policy.

Immediate family shall be defined as spouse; natural, foster, or step parent; grandchild; mother-in-law; father-in-law; natural, foster, or stepbrother; natural, foster, or stepsister, natural, foster, or stepchild or any relative residing in the same household, the domestic partner of the student and a child or parent of the domestic partner or any other relative of the domestic partner living in the same household.

More information can be found at:
http://www.brooklyn.cuny.edu/web/about/initiatives/policies/bereavement.php

Important Dates:

Wednesday, August 25 First day of Fall 2021 classes
Tuesday, August 31 Last day to add a course
Monday, December 13 Last day to withdraw from a course with a "W" grade
Tuesday, December 14 Reading Day
Wednesday, December 15 Final Examinations Begin
Tuesday, December 21 Final Examinations End / End of Spring Semester