CISC1003 – Explore Robotics

Course Information:

Instructor Information:

- Tzipora Halevi
- halevi@sci.brooklyn.cuny.edu
- Ingersol Hall, room 2156A
- Office Hours: Mon, 2:30 – 5:30 pm

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

Hours and location:

Mon 6:30pm – 9:15 pm	Ingersoll 3208

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:

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

LEGO MINDSTORMS NXT software Programming Guide
Publisher: Apress; 2nd ed. 2007 edition (June 11, 2010)
ISBN-10: 1430229764
ISBN-13: 978-1430229766

Lab Book
The labs are available online for printing on the course webpage. The course printouts are also available online.

Please bring a USB Drive to save your work.

Course Structure:

6 Units (consisting of):

- 1-2 lectures
- 2 labs
- 1-2 assessment assignments (HWs, quizes, classroom demonstrations)

Grading = 6 Unit Materials (10% each) + Final (30%) + Attendance & Participation (10%)

- Attendance: This is a hands-on course. There is no option of making up missed labs.
- Lab with two partners per group
    - Hands-on session using Lego Robot (Mindstorm NXT).

Course Outline:

Unit A: Introduction to Robotics: technical and societal issues. Begin robot construction. Introduction to NXT Programming software and Differential Drive Control

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.

Unit E: Multiple robot activities in a complex environment. Interactive robot programming using wide selection of the robot functions.

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

Additional Resources:

The LEGO Mindstorm NXT User's guide, building guide and programming guide are all available on the course webpage.

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.

Center for Student Disability Services:

In order to receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up an appointment with the Director of the Center for Student Disability Services, Ms. Valerie Stewart-Lovell at (718)951-5538. If you have already registered with the Center for Student Disability Services, please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.

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. 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.

Important Dates:

Sunday, September 2	Last day to add a course
Wednesday, September 5	Last day to file for elective course Pass/Fail
Saturday, September 15	Last day to file for graduation (Dec. 31 and Feb. 1)
Monday, September 17	First day to withdraw from a course with a grade of "W"
Tuesday, November 6	Last day to resolve Spring 2018 and Summer 2018 incomplete grade (INC)
Tuesday, November 6	Last day to withdraw from course with a W (non-penalty) grade