COURSE CALENDAR DESCRIPTION

An introduction to robotic manipulators and autonomous vehicles. The course covers the kinematics and dynamics of manipulators and autonomous platforms, robot sensors and navigation. Prerequisites: cumulative GPA of 4.50 or better over all major EECS courses (without second digit "5"); LE/EECS 2030 3.00 or LE/EECS 1030 3.00; SC/MATH 1025 3.00, SC/MATH 1310 3.00, SC/MATH 1310 3.00, LE/EECS 2031 3.00. Previously offered as: LE/CSE 4421 3.00.

INSTRUCTOR(S)

<table>
<thead>
<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
<th>Contact Phone</th>
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<tbody>
<tr>
<td>Spetsakis, Minas E</td>
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<td>York Ext. 77886</td>
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ADDITIONAL INFORMATION

Course Description

In this course we will cover a rather wide variety of topics and the student will have a chance to study a particular topic in depth by doing a project. The topics we will cover are:

- Robot Locomotion and Sensing
- Mathematics of Motion Representation
- Robotic Manipulator Forward and Inverse Kinematics
- Dealing with uncertainty, Kalman filter
- Robot Vision
- Path Planning and Pose Maintenance
- Manipulator Velocities and Forces
- Control concepts (optionally)

Programming Assignments

There will be two programming/theoretical assignments (2x10%) and a project that includes a marked proposal (10+20%). You will use the facilities in the robotics lab, work in groups of two and use the software provided by the instructor or other software with which you are familiar. The assignment, proposal and project will be demoed to the instructor/TA and the project demoed and presented to instructor/TA and the class.

Tests

There will be a midterm worth 20% and a final worth 30%. The final will cover all the material in the course.

Text


Other Reading


ACADEMIC INTEGRITY LINKS

- Senate Policy on Academic Honesty - http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/
- Academic Integrity - http://lassonde.yorku.ca/academic-integrity

STUDENT LINKS

- Student Rights and Responsibilities - http://oscr.students.uit.yorku.ca/student-conduct
- Religious Observance - https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs
- Counselling and Disability Services - http://cds.info.yorku.ca/
- York University’s Policies on Gender/LGBTQ*/Positive Space - http://rights.info.yorku.ca/lgbtq/

LAND ACKNOWLEDGEMENT

- We acknowledge our presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, the Huron-Wendat, and the Métis. It is now home to many Indigenous Peoples. We acknowledge the current treaty holders, the Mississaugas of the New Credit First Nation. This territory is subject of the Dish With One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region.
- The Indigenous Framework for York University: A Guide to Action can be found here: http://indigenous.info.yorku.ca/
- Meaning of a land acknowledgement: http://healthydebate.ca/opinions/indigenous-land-acknowledgements

Many courses utilize Moodle, York University’s course website system. If your course is using Moodle, click here to access it.

Moodle @ York University