EXPANDED COURSE DESCRIPTION
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE
Lassonde School of Engineering
Electrical Engineering Computer Science
LE / EECS 3505 3.0 SECTION E
ELECTRICAL SYSTEMS FOR MECHANICAL ENG
FALL 2018 / WINTER 2019

Last Modified Date: 08/29/2018

COURSE CALENDAR DESCRIPTION

Many mechanical systems today are integrated with electrical systems. This course will prepare students to work on electromechanical systems by introducing them to topics such as: The basics of circuit analysis and setup, as well as electronics; power systems including 3-phase; DC and AC motors; electro-mechanical actuators; and, time permitting, basics of communication protocols. Prerequisites: SC/PHYS 1801 3.00, LE/MECH 2502 3.00.

INSTRUCTOR(S)

<table>
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<tr>
<th>Name</th>
<th>Section / Format / Term</th>
<th>Contact Email</th>
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<td>Lam, John Chi Wo</td>
<td>Sec. E / LECT / F</td>
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ADDITIONAL INFORMATION

COURSE DESCRIPTION:

This is a course that develops the knowledge and skills mechanical engineers need to interact with electrical/electronic systems. Topics covered include Electronic Components-Devices, Electrical Noise, Introduction to Electro-magnetism, DC Machines, Transformer & Three-Phase AC Circuit, Three-Phase Induction Motors, Synchronous Machines, Special Machines include stepper, linear and BLDC motors, and communication protocols. A weekly one-hour tutorial/small lab exercises will be given.

COURSE LEARNING OUTCOMES:

- Comprehend the basic concepts of circuits as well as electronic components and apply simulation tools to model their inputs and outputs relationships
- Explain the characteristics of electronic devices such as diode, operational amplifier, latches, etc, and evaluate the behaviour of both passive and active filters including low pass, high pass and band pass.
- Design and employ noise reduction strategies to improve signal
- Recognize the two basic principles (i.e., generation of force and EMF) related to electromechanical energy
- Identify the principles of operation of different machine types including: DC machines, induction machines, synchronous machines, stepper motors, linear motors and servo

TEXTBOOK:


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
• Academic Accommodation for Students with Disabilities -  
  http://secretariat-policies.info.yorku.ca/policies/academic-accommodation-for-students-with-disabilities-policy/
• Counselling and Disability Services - http://cds.info.yorku.ca/
• York University Racism Policy and Procedures -  
  http://secretariat-policies.info.yorku.ca/policies/racism-policy-and-procedures/
• York University’s Policies on Sexual Violence -  
  http://secretariat-policies.info.yorku.ca/policies/sexual-violence-policy-on/
• 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

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

Moodle @ York University