EXPANDED COURSE DESCRIPTION
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE
Lassonde School of Engineering
Electrical Engineering Computer Science
LE / EECS 1011 3.0 SECTION Z
COMPUTATIONAL THINKING
FALL 2019 / WINTER 2020

Last Modified Date: 08/07/2019

COURSE CALENDAR DESCRIPTION

The Objectives of 1011 are threefold: providing a first exposure to procedural programming, teaching students a set of soft computing skills (such as reasoning about algorithms, tracing programs, test-driven development), and demonstrating how computers are used in a variety of engineering disciplines. It uses problem-based pedagogy to expose the underlying concepts and an experiential laboratory to implement them. An integrated computing environment (such as MATLAB) is used so that students can pick up key programming concepts (such as variables and control flow) without being exposed to complex or abstract constructs. The problems are chosen with consultation with the various engineering disciplines in the Faculty with a view of exposing how computing is used in these disciplines. Course credit exclusions: LE/EECS1541 3.00.

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INSTRUCTOR(S)

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<th>Section / Format / Term</th>
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ADDITIONAL INFORMATION

MAIN TOPICS
1. The Computing Environment: Workspace, built-in commands, the debugger, unit testing, plots, etc.
2. Variables and Expressions: Types, operators, precedence, roundoff errors
3. Control Structures: Selection and Iteration
4. Encapsulation: Script files and functions
5. Computational Thinking: Process-based problem solving, unit tests as specification

Soft Computing Skills
1. Reasoning about algorithms
2. Tracing program
3. Test-driven Development

Applications
1. General Science and Mathematics
2. Engineering applications derived from the various engineering programs in the Faculty.

LIST OF LEARNING OUTCOMES AND EXAMPLES OF
By the end of the course, the students will be able to:
1. Use a set of soft computing skills such as reasoning about algorithms, tracing programs, and test-driven development for programming applications.
2. Explain and apply the fundamental constructs in procedural programming, including variables and expressions, control structures (conditionals/loops), and documentation.
3. Write simple programs using functions defined in m-files.
4. Use the computing environment to implement/simulate selected applications from science, math, and engineering.

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
- Student Accessibility Services (SAS) - https://accessibility.students.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