EXPANDED COURSE DESCRIPTION
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE
Lassonde School of Engineering
Electrical Engineering Computer Science
LE / EECS 1541 3.0 SECTION M
COMPUTING FOR THE PHYSICAL SCIENCES
FALL 2017 / WINTER 2018

Last Modified Date: 08/18/2017

COURSE CALENDAR DESCRIPTION
An introduction to scientific computing using an integrated computing and visualization platform. Elements of procedural programming such as: control structures, data types, program modules. Visualization in two and three dimensions. Applications to numerical computation and simulations relevant to the physical sciences. Twice weekly meetings, each consisting of one lecture hour followed by a one and a half hour laboratory session. One term. Three credits. Prerequisite: SC/MATH 1013 3.00 or equivalent; Corequisites: SC/PHYS 1010 6.00 or SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00; and SC/MATH 1021 3.00 or SC/MATH 1025 3.00; Course credit exclusions: LE/EECS 1011 3.00, LE/EECS 1560 3.00, LE/SC/CSE 1560 3.00, LE/EECS 1570 3.00, LE/SC/CSE1570 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</td>
<td>Sec. M / LECT / W</td>
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TOPICS AND CONCEPTS

Topic Overview:
An integrated procedural programming, data analysis, and data visualization platform such as MATLAB () will be used to introduce computational elements. Topics will include:
  • Overview of the platform and computational accessories
  • Fundamentals of the platform, including operational syntax
  • Data types (including cell arrays)
  • Data file input/output
  • Data statistics
  • Basic and advanced plotting of data, including surface and contour plots
  • Procedures and control structures, including syntax, conditional evaluation statements (IF-ELSE), and loop programming (nested FOR loops, WHILE loop)
  • Code vectorization
  • User-defined functions
  • Advanced functions (including nested and recursive functions and sorting)
  • Simple matrix methods (systems of linear equations)
  • Random numbers
  • Advanced mathematics (curve fitting, basic calculus, solving equations)
  • Data acquisition
GRADED ASSESSMENT

Evaluation
Labs (8 marked labs): 24%
Test 1 (written): 20%
Test 2 (written and programming): 20%
Exam (written): 36%
Students may view their grades using the ePost system. All grades distributed via ePost are unofficial and are subject to review by the Department of Electrical Engineering and Computer Science. A student’s final grade will be expressed as a letter grade.

ADDITIONAL INFORMATION

Textbook
The following textbook is the required textbook for the course, and is available from the campus bookstore. The book contains many examples, offers sections on common pitfalls and programming guidelines, and has a rich set of exercises at the end of every chapter.

Book Title
MATLAB: A Practical Introduction to Programming and Problem Solving, 4th Edition
Stormy Attaway

Tests
Tests may include both written questions and programming questions that are administered under labtest mode. Labtest mode is a special test environment within the lab where most network services have been disabled. Different lab sections can expect to have different versions of the test. Written tests are done in-class. Tests are marked by the instructor and the teaching assistants, and contribute to the final grade as described above.

Exam
The exam will be conducted similarly to the tests. The exam will take place during the scheduled examination period at the end of term at a time determined by the Registrar.

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/

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