SCHULICH School of Engineering

COURSE OUTLINE (preliminary)
Fall 2017

1. Calendar Information

ENEL 102 Computing Tools 2

Course builds on the programming proficiency skills developed in ENEL101. Emphasis will be on applications requiring numerical analysis and solutions, including: solving multi-variable linear and non-linear equations; polynomial curve-fitting; single and multivariable integration; function optimization; differential equations and data representation in annotated two and three dimensional plots.

Course Hours: Q (16 hours), on-line self-paced, Office hours 1-3pm daily

Calendar Reference:

http://www.ucalgary.ca/pubs/calendar/current/electrical-engineering.html#

2. Learning Outcomes

At the end of this course, you will be able to:

1. Solve a set of linear equations with a large number of variables and understand some of the problems of attaining high numerical accuracy
2. Solve a single variable nonlinear equation
3. Find the simultaneous solution to multiple linear and nonlinear equations of several variables.
4. Fit a low order polynomial to locally approximate an arbitrary nonlinear function
5. Numerically integrate a function of one or two variables
6. Numerically determine the maximum or minimum of a function of several variables
7. Numerically compute the solution to an ordinary differential equation
8. Solve various categories of problems using symbolic computation.

3. Timetable (NA on-line course, no lectures)

Section	Days of the Week	Start Time	Duration (Minutes)	Location

4. Course Instructors

Course Instructor

Section	Name	Phone	Office	Email
	John Nielsen	403-210-9704	ICT311	nielsenj@ucalgary.ca

Teaching Assistants

Section	Name	Phone	Office	Email
	TBD			

5. Examinations (NA)

6. Use of Calculators in Examinations (NA)

7. Final Grade Determination

The final grade in this course will be a pass or incomplete. No letter grade will be assigned. There will be 7 assignments for the course. A passing mark is an average of 70% or higher. Students with an average of less than 70% will obtain an incomplete status for the overall course.

8. Textbook

There will be no textbook for the course. Instead a set of notes will be put on-line which provide a stepwise procedure with reading assignments and completing assignment problems. The reading assignments will be based on downloadable components of the Matlab reference manuals from www.mathworks.com. A recommended supplementary text for this course is the same as used in ENEL101:

Title	**Matlab An introduction with applications**
Author(s)	Amos Gilat
Edition, Year	6th edition, 2017, ISBN 13: 978-0-470-76785-6 (does not need to be 6th edition, 3rd edition or higher is fine)
Publisher	John Wiley

9. Course Policies

Advising Syllabus

All Schulich School of Engineering students and instructors have a responsibility to familiarize themselves with the policies described in the Schulich School of Engineering Advising Syllabus available at:

http://schulich.ucalgary.ca/undergraduate/advising

Emergency Evacuation/Assembly Points

In the event of an alarm sounding, all classrooms and labs must be evacuated immediately. Please respond to alarms promptly by leaving the building by the closest available exit. Faculty and students must remain outside the building until the 'all clear' has been given by a Fire Marshall. In case of emergency, call 220-5333.

Assembly Points have been identified across campus. These areas have been selected as they are large enough to hold a significant number of people and will provide an evacuated population access to washroom facilities and protection from the elements. More information on assembly points can be found at http://www.ucalgary.ca/emergencyplan/assemblypoints.

10. Additional Course Information

There will be 7 assignments total which are described below:

assign	description	sections in text	due date, time is 11:59pm of date indicated
1	Review of Matlab calculations	Chapters 1-6	Sept 18
2	Matlab functions	Chapter 7	Oct 2
3	Polynomials and curve fitting	Chapter 8	Oct 16
4	solving nonlinear equations and optimization	Chapter 9	Oct 30
5	numerical integration	Chapter 9	Nov 13
6	Solving Differential equations	Chapter 9	Nov 27
7	Matlab Symbolic math	Chapter 11	Dec 11

Templates for all of the 7 assignments are given in D2L under the assignments tab. All assignments are Word documents uploaded in D2L.

Template revised on 30 July 2013 (RWB)