ELEC 403 Engineering Design by Optimization

Term – Summer 2017 (201705)

Instructor
Dr. Wu-Sheng Lu
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Office Hours
Days: Wednesdays
Time: 14:00 – 16:00
Location: EOW 427

Course Objectives
To understand fundamental principles and basic algorithms for unconstrained optimization problems encountered in engineering analysis and designs.

Learning Outcomes
Ability to analyze and formulate typical engineering analysis/design problems as optimization problems; and apply appropriate algorithms to obtain and evaluate optimal solutions to the problems at hand.

Syllabus

Basic Principles .................................................................................................................................................. 9

One-Dimensional Optimization (Line Search) ................................................................................................ 7

Basic Multi-Dimensional Gradient Methods .................................................................................................. 7

Conjugate Direction Methods ....................................................................................................................... 3

Quasi-Newton Methods .................................................................................................................................. 6

Case Studies ....................................................................................................................................................... 6

A-Section: A01 / CRN 30333
Days: TWF
Time: 12:30-13:20
Location: ECS 108

B01 Tuesdays (May 30, Jun. 13, Jun. 27, Jul. 18) 2:00-4:50pm ELW B220
TA for B01: Ms. Ioana Sevcenco (e-mail: iss@ece.uvic.ca)

B02 Tuesdays (Jun 6, Jun. 20, Jul. 11, Jul. 25) 2:00-4:50pm ELW B220
TA for B02: Mr. Hamed Mosavat (hamedmosavat@uvic.ca)

B03 Wednesdays (May 31, Jun. 14, Jun. 28, Jul. 19) 1:30-4:20pm ELWB220
TA for B03: Ms. Ioana Sevcenco (e-mail: iss@ece.uvic.ca)
Required Text
Title: Practical Optimization: Algorithms and Engineering Applications
Authors: A. Antoniou and W.-S. Lu
Publisher: Springer
Year: 2007

Assignments 10%
Labs 15%
Mid-term 20% Date: June 27, Tuesday.
Final Exam 55%

- Marker of assignments: Ms. Harajneh Maymoona (e-mail: maymoona@uvic.ca)

Note:
Failure to complete all laboratory requirements will result in a grade of N being awarded for the course.
Failure to pass the final exam will result in a failing grade for the course.

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

Assignment of E grade and supplemental examination for this course will be at the discretion of the Course Instructor. The rules for supplemental examinations can be found in the current Undergraduate Calendar.
http://web.uvic.ca/calendar2017-05/undergrad/info/regulations/grading.html

Note to students: Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Secretary to set up an appointment.

Accommodation of Religious Observance: http://web.uvic.ca/calendar2017-05/general/policies.html
Policy on Inclusivity and Diversity: http://web.uvic.ca/calendar2017-05/general/policies.html

Standards of Professional Behaviour: You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.
https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.
http://web.uvic.ca/calendar2017-05/undergrad/info/regulations/academic-integrity.html

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for

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appropriate accommodation. Alternatively, you may want to contact the Resource Centre for Students with a Disability located in the Campus Services Building.
The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes: Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.