

THE UNIVERSITY OF BRITISH COLUMBIA OKANAGAN

MATH/COSC 303 - Numerical Analysis

2013-2014, Winter Term 2

Course Information

Lectures: ART 110, Mon & Thur 3:30pm–5pm

Textbook: Numerical Methods using MATLAB, 3e, Lindfield & Penny. ISBN: 978-0-12-386942-5

- Text is available as a pdf book loan from UBC Library
- Lecture notes will cover theory, the textbook is primarily used for lab

Instructor: Warren Hare, warren.hare@ubc.ca, 250-807-9378

Office Hours: ASC 353, Tues 10am–noon & 2pm–4pm

Calendar Entry

MATH 303 (3) Numerical Analysis

Numerical techniques for basic mathematical processes and their analysis. Taylor polynomials, root-finding, linear systems, eigenvalues, approximating derivatives, locating minimizers, approximating integrals, solving differential equations. [3, 1, 0]

Prerequisite: All of COSC 121, MATH 200, and MATH 221.

Topics

- Round off Error, Rates of Convergence
- Solving Linear Systems: Gauss-Jordan, Factorization Techniques
- Solving Non-linear Systems: Bisection, Fixed Point, Newton
- Numerical Differentiation: 2 point, 3 point, Higher order
- Numerical Integration: 2 point, 3 point, Adaptive Quadrature
- Solving ODEs: Euler, Runge Kutta, Higher Order Methods
- Data Fitting: Interpolation, Splines, Regression
- Numerical Optimization: Steepest Descent, Newton's Method

Evaluation

Assignments:	40%
Midterm (date TBA):	15%
Lab Exam (April 1, in lab):	15%
Final Exam:	30%

Students must pass the final exam to pass the course.

Academic Integrity

Cheating is not tolerated. Don't do it.

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the break down of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course.

Careful records are kept to monitor and prevent recidivism. A more detailed description of academic integrity, including the policies and procedures, may be found at

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,54,111,959>

If you have any questions about how academic integrity applies to this course, consult with the instructor.

Disability Assistance

If you require disability-related accommodations to meet the course objectives, please contact the Coordinator of Disability Resources located in the Student Development and Advising area of the student services building. For more information about Disability Resources or academic accommodations, please visit the website at:

<http://www.ubc.ca/okanagan/students/drc/welcome.html>

Equity, Human Rights, Discrimination and Harassment

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If you require assistance related to an issue of equity, discrimination or harassment, please contact the Equity Office, your administrative head of unit, and/or your units equity representative.

- UBC Okanagan Equity Advisor: ph. 250-807-9291; email equity.ubco@ubc.ca
- Web: www.ubc.ca/okanagan/equity
- Unit Equity Representatives:

<http://www.ubc.ca/okanagan/equity/programs/equityreps/unitcontacts.html>