MEC E 390
Numerical Methods for Mechanical Engineers
Fall 2011

Instructor
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Office Hours: We 13-14 Th 17-18 We 13-14 Th 17-19 Mo 13-15 We 13-14 Mo 13-14 We 13-15
Lab room: 4-19 3-28 3-3 3-28 3-3 3-3 3-3 4-19

Prerequisites
MATH 102, MATH 201

Texts

Homepage
eClass: http://www.elearning.ualberta.ca/ (use your CCID login and password)

Schedule
Lectures: Tue, Thu 0800–0920 (ETLE 1-017)
Labs: Mon 1300–1350 (MecE 3-3); Wed 1300–1350 (MecE 3-3); Wed 1300–1350 (MecE 4-19);
Thur 1700–1750 (MecE 3-28) (starting Sep. 12,14,15)

Course Objectives
– Understand basic numerical methods and their approximate nature (errors, convergence, etc), their
  weaknesses, and strengths.
– Practise programming and debugging in MATLAB.

Course Outline
1. Introduction
2. Errors and Uncertainties in Numerical Calculations
3. Roots of Equations
4. Solution of Simultaneous Nonlinear and Linear Equations
5. Curve Fitting and Interpolation
6. Numerical Integration and Differentiation
7. Numerical Integration of ODEs

Mark Distribution
Assignments: 25% (10, posted Mondays)
Midterm Exam: 25% (Thu., Oct. 20, 0800–0920, in class)
Final Exam: 50% (Fri., Dec. 16, 0900–1100, room TBD)

Exam Policy
Missed midterm exams will have their marks transferred to the final exam.
No calculators are permitted in the exams.
Assignments are very important! There will be questions about them on the exams.
Recording in class and labs is permitted only with the prior written consent of the professor.
Amendments to the Code of Student Behaviour occur throughout the year. For the most recent version of the Code, visit the University Governance website at [http://www.usfeweb.ualberta.ca/governance/StudentAppeals&Regulations.cfm](http://www.usfeweb.ualberta.ca/governance/StudentAppeals&Regulations.cfm).

NOTICE TO INSTRUCTORS REGARDING PLAGIARISM, CHEATING, MISREPRESENTATION OF FACTS AND PARTICIPATION IN AN OFFENCE

The University considers plagiarism, cheating, misrepresentation of facts and participation in an offence to be serious academic offences. Plagiarism, cheating, misrepresentation of facts and participation in an offence can be avoided if students are told what these offences are and if possible sanctions are made clear in advance. Instructors should understand that the principles embodied in the Code are essential to our academic purpose. For this reason, instructors will be fully supported by Departments, Faculties and the University in their endeavours to rigorously discover and pursue cases of academic dishonesty in accordance with the Code.

At the beginning of each term, we ask you to review with your students the definitions of plagiarism and cheating. We are now also asking you to review with your students the definition of Misrepresentation of Facts and Participation in an Offence. Your co-operation and assistance in this matter are much appreciated.

30.3.2(1) Plagiarism

No student shall submit the words, ideas, images or data of another person as the student’s own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.

30.3.2(2) Cheating

30.3.2(2)a) No student shall submit the course of an examination or other similar activity, essay, thesis, project, assignment, presentation or poster that is the work or effort of another person.

30.3.2(2)b) No student shall use, permit the use of, or have or be in the possession of another person’s examination, preparation of a paper or other similar activity. See also misrepresentation in 30.3.6(4).

Creating (Continued)

30.3.2(2)c) No student shall represent another’s substantial editorial or compositional assistance on an assignment as the student’s own work.

30.3.2(2)d) No student shall submit in any course or program of study, without the written approval of the course instructor, all or a substantial portion of any academic writing, essay, thesis, research report, project, assignment, presentation or poster for which credit has previously been obtained by the student or which has been or is being submitted by the student in another course or program of study in the University or elsewhere.

30.3.2(6) Participation in an Offence

No student shall encourage or knowingly aid or assist, directly or indirectly, another person at the commission of an offence under this Code.

The Truth in Education (“TIE”) project is a campus wide educational campaign on Academic Honesty. This program was created to let people know the limits and consequences of inappropriate academic behaviour. These are helpful tips for instructors and students. Please take the time to visit the website at [http://www.ualberta.ca/tie](http://www.ualberta.ca/tie).

EXCERPTS FROM THE CODE OF STUDENT BEHAVIOUR

FOR REVIEW WITH EACH CLASS AT THE BEGINNING OF EVERY TERM

<table>
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<th>Procedures for Instructors Regarding Plagiarism, Cheating, Misrepresentation of Facts and Participation in an Offence</th>
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<td>The following procedures are drawn from the Code of Student Behaviour as approved by GIF and the Board of Governors. The guidelines summarize what instructors must do when they have reason to believe that a student has plagiarized, cheated, misrepresented facts or participated in an offence. If you have questions about these guidelines, or about the procedures, please talk with the senior administrator in your Faculty responsible for dealing with student discipline—usually an Associate Dean or the Appeals Coordinator, University Governance (2-2655).</td>
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| 30.5.4 Procedures for Instructors in Cases Respecting Inappropriate Academic Behaviour |
| 30.5.4(1) When an instructor believes that a student may have committed an Inappropriate Academic Behaviour Offence (30.2.1) or that there has been Misrepresentation of facts (30.3.4(3)) or Participation in an Offence (30.3.6(3)) in cases respecting Inappropriate Academic Behaviour in the course that he or she instructs, the instructor will immediately inform the student of the purpose of the meeting. In the event that the student refuses or fails to meet with the instructor within a reasonable period of time specified by the instructor, the instructor shall take into account the available information, decide whether a report to the Dean is warranted. (CLRC 30 MAY 2002) (LEXEC 7 APR 2003) (CLRC 27 NOV 2003). |

| 30.5.4(2) If the instructor believes there has been a violation of the Code, the instructor shall, as soon as possible after the event occurred, report that violation to the Dean and provide a written statement of the details of the case. The instructor may also include a recommendation for sanction. (CLRC 27 NOV 2003). |

Possible Sanctions

| One or more of the following sanctions given in 30.4.3(2) and (3) of the Code are commonly used for plagiarism, cheating, participation in an offence, and misrepresentation of facts. |
|---|---|
| 30.4.3(2)a) A mark reduction or a mark of 0 in any term work or examination for reason of Inappropriate Academic Behaviour (GFC 24 SEP 2007). |
| 30.4.3(2)b) A reduction of a grade in a course. |
| 30.4.3(2)c) A grade of F for a course. |
| 30.4.3(2)d) A note in the transcript (9 or 9s failing graduate student grade). |
| 30.4.3(3) Suspension |
| 30.4.3(3)a) Suspension of a Degree already awarded |
| 30.4.3(3)b) Suspension of a Degree already awarded |

30.6.1 Initiation of an Appeal

30.6.1(1) When a student has been found to have committed an offence under the Code of Student Behaviour or an Appeal is found to have committed an offence under the Code of Applicant Behaviour (Student) 11.8 of the GIF Policies Manual), whether or not that student or applicant has been given a sanction, the student or applicant may appeal that decision, except in the case of a decision of the Discipline Officer under 30.5.6(2)e), which remains final and is not subject to appeal. In cases where a final decision has been recommended to the Discipline Officer, once the student receives the final decision of the Discipline Officer, the student can appeal the decisions of both Dean and the Discipline Officer at the same time. The written appeal must be presented to the Appeals Committee within 15 Working Days of the date of the written appeal. The written appeal must also state the grounds of appeal and be signed by the student. The appeal shall be heard by the Appeals Committee up to 12 weeks from the date of receipt of the appeal (LIGC 25 SEP 2003) (LEXEC 1 MAY 2004) (GFC 24 SEP 2007) (LEXEC 1 MAY 2010) |