

AMATH 451 – Introduction to Dynamical Systems – Winter 2009

The goal of this course is to learn the basic qualitative techniques used to study nonlinear ordinary differential equations. These differential equations will come from models for physical, biological, chemical and other systems.

- Instructor:** S.A. Campbell, MC 5124, ext. 35461, sacampbell@uwaterloo.ca
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Web Page: Available through the ACE system - www.uwace.uwaterloo.ca
Lectures: Monday, Wednesday, Friday 11:30, MC4064
Prerequisite: AMATH 351
Text: *Differential Equations and Dynamical Systems* by L.E. Perko
Topics: We will cover most of Chapters 1 and 2 and selected topics from Chapters 3 and 4.
References: On reserve in the Davis Library (call numbers as indicated).
Differential Equations, Dynamical Systems, and Linear Algebra,
M.W. Hirsch and S. Smale (QA3.P8 v.60)
Nonlinear Dynamics and Chaos, S.H. Strogatz (Q172.5.C45S767 1994)
Midterm Test: Wednesday, February 24, 4:30-6:30 p.m.
Assignments: There will be one assignment approximately every other week.
Solutions to the assignments will be posted on the Course Web page.
Marked assignments will be handed back in class. Unclaimed assignments will be placed in a box outside Prof. Campbell's office.
Final Grade: 10% assignments, 30% midterm test, 60% final exam/project*

*Those who obtain a mark of 80% or higher on the midterm test may choose to do a final project instead of taking the final exam.

Academic Integrity.

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. For more information see: www.uwaterloo.ca/academicintegrity/

Discipline: A student is expected to know what constitutes academic integrity (see website above) to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about rules for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline, www.adm.uwaterloo.ca/infosec/Policies/policy71.htm. For typical penalties check Guidelines for the Assessment of Penalties, www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm.

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4: www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Appeals: A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Note for Students with Disabilities.

The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with OPD at the beginning of each academic term.