

MAST 331
Mathematical Modelling
Winter 2021

Preface: Due to exceptional circumstances, this course will be taught and all assessments will be done completely ONLINE.

Instructor: Dr. A. Boyarsky
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Office Hours: _____

Schedule: Mondays and Wednesdays 14:45-16:00.

References: *Elementary Differential Equations*, Boyce and Diprima, 11th Edition.

Course Outline:

1. Introduction to modeling and dynamical systems.
2. First order linear dynamical systems.
3. Introduction to nonlinear dynamical systems.
4. Stability and bifurcation behavior for nonlinear dynamical systems.
5. Qualitative Theory of Dynamical systems.

Calculators: Only calculators approved by the Department are permitted in the class test and final examination. The preferred calculators are the **Sharp EL 531** and the **Casio FX 300MS**. For the list of approved calculators see:
<http://www.concordia.ca/artsci/math-stats/services.html#calculators>

Grading: The grading will be the higher of:
Assignments (10%), Midterm test (30%), Final exam (60%);
OR 100% for the final examination.

The midterm and final exam will be delivered by Moodle. The final exam will be 3 hours long.

The assignments and their solutions will be available on Moodle.

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." [*Undergraduate Calendar, Sec 17.10.2*]

Behaviour

All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

Concordia students are subject to the [Code of Rights and Responsibilities](#) which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in University activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property

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Extraordinary circumstances

In the event of extraordinary circumstances and pursuant to the [Academic Regulations](#) the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.