

## COURSE OUTLINE

Math 442/551 [A01] 22114, Spring 2017: Advanced Ordinary Differential Equations

Department of Mathematics and Statistics, University of Victoria

### INSTRUCTOR

Dr. Florin Diacu, **Office:** David Turpin Building A-543, **Phone:** 250-721-6330, **Email:** diacu@uvic.ca

**Lectures:** Tue.: 2:30–4:20, Clearihue Building D-130. Fri.: 2:30–3:20, Clearihue Building D-125

**Office hours:** Tue., Wed.: 11:30–12:30 or by appointment

### PREREQUISITES

One of Math 300 or Math 335, Math 342, or permission of the Department.

### TEXTBOOK

No textbook is required.

### SYLLABUS

Rigorous existence and uniqueness theory; qualitative theory of systems of ordinary differential equations including stability; periodic orbits; Poincaré-Bendixson theory; bifurcations; stable, unstable and centre manifold theorems; Hamiltonian systems. If time permits, elements of chaos theory and KAM theory will be covered.

### EXAMINATIONS AND GRADING

**Assignment 1.** Due on Friday, Jan. 27, in class, worth 20% of the final grade

**Assignment 2** Due on Friday, Feb. 24, in class, worth 25% of the final grade

**Assignment 3** Due on Friday, March 24, in class, worth 25% of the final grade

**Take-home final exam:** Provided on April 4, after the last class, worth 30% of the final grade, and due on Thursday, April 6, no later than 4:00 pm in the Main Office of the Department. Late submissions will not be accepted.

**Missing work:** No assignment extensions or make-ups will be offered. If you are unable to write an assignment due to serious illness then you must provide adequate documentation as soon as possible, and your course grade will be re-weighted. If you will be unable to write an assignment due to religious observance then you must notify your instructor of this fact no later than Jan. 11, 2017, and your course grade will be re-weighted. If you do not complete any two assignments or an assignment and the final exam, the course will be deemed incomplete.

**Re-marking requests:** If you believe that your midterm or assignment has been incorrectly marked, you must write a short (at most 1 page) explanation and staple it to the front of your midterm. This request must be submitted to your course instructor no later than a week after it was returned in class. You are responsible of the consequences of not being in class when midterms or assignment s are returned. Late

re-marking requests, or requests submitted during office hours, will not be considered except in the case of absence due to serious illness, accident, family affliction, or religious observance.

**Off-schedule final examinations:** Deferred examinations are given only in accordance with the university policy as outlined in the Calendar. If you are unable to write a final examination due to illness, accident or family affliction, please refer to the following webpages for detailed instructions how to proceed:

<http://web.uvic.ca/calendar2014/FACS/UnIn/UARe/AcCo.html>

<http://web.uvic.ca/calendar2014/FACS/UnIn/UARe/DeSt.html>

Students are strongly advised not to make plans for travel or employment during the final examination period as special arrangements will not be made for examinations that conflict with such plans.

**Supplemental examinations:** The Department of Mathematics and Statistics does not award E grades and does not offer Supplemental Examinations in any of its courses.

**Accessability:** Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the Resource Centre for Students with a Disability (RCSD) as soon as possible. The RCSD staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations

<http://rcsd.uvic.ca/>

The sooner you let us know your needs, the quicker we can assist you in achieving your learning goals in this course.

**Letter grades:** Grading percentage scores will be converted to letter grades according to the university-wide standard table

<http://web.uvic.ca/calendar2014/FACS/UnIn/UARe/Grad.html>

## **POLICIES AND ETHICS**

**Attendance.** The university Calendar states “Students are expected to attend all classes in which they are enrolled.” (see <http://web.uvic.ca/calendar2014/FACS/UnIn/UARe/AcCo.html>). Our courses are conducted on that basis. If you miss an announcement (information concerning midterms, corrections to assignment, etc.) because you did not attend class, you must accept the consequences of not having learned of the change.

**Guidelines on Religious Observances.** Where classes or examinations are scheduled on the holy days of a religion, students may notify their instructors, at least two weeks in advance, of their intention to observe the holy day(s) by absenting themselves from classes or examinations. Instructors will provide reasonable opportunities for such students to make up work or missed examinations.

**Academic Integrity.** Academic integrity is intellectual honesty and responsibility for academic work that you submit individual or group work. It involves commitment to the values of honesty, trust, and responsibility. It is expected that students will respect these ethical values in all activities related to learning, teaching, research, and service. Therefore, plagiarism and other acts against academic integrity are serious academic offenses.

**The responsibility of the institution.** Instructors and academic units have the responsibility to ensure that standards of academic honesty are met. By doing so, the institution recognizes students for their hard

work and assures them that other students do not have an unfair advantage through cheating on essays, exams, and projects.

**The responsibility of the student.** Plagiarism sometimes occurs due to a misunderstanding regarding the rules of academic integrity, but it is the responsibility of the student to know them. If you are unsure about the standards for citations or for referencing your sources, ask your instructor. Depending on the severity of the case, penalties include a warning, a failing grade, a record on the students transcript, or a suspension. It is your responsibility to understand the University's policy on academic integrity:

<http://web.uvic.ca/calendar2014/FACS/UnIn/UARe/PoAcI.html>