MAT 1330C: Calculus for the Life Sciences I, Fall 2019

Professor: Dr. Catalin Rada, Office STEM 666, crada@uottawa.ca

Course description: Discrete dynamical systems (DTDS): equilibrium points, stability, cobwebbing. Derivatives: product and quotient rules, chain rule, derivative of exponential, logarithm and basic trigonometric functions, higher derivatives, curve sketching. Applications of the derivative to life sciences. Integrals: indefinite and definite integrals, fundamental theorem of calculus, antiderivatives, substitution, integration by parts. Applications of the integral to life sciences.

How to learn Calculus

Attend Lectures: MON 2:30-4:00 and THU 4:00-5:30 in CBY C03. Prepare for class by reviewing the material of the previous class and reading the textbook.

Attend DGDs: This is your Directed Group Discussion, led by a graduate student TA, who will answer questions and work through the suggested exercises for the preceding two lectures. You can print the DGD Workbook. The DGDs for the course (you attend only one) are:

Monday 5:30 - 7:00	STE B0138
Thursday 5:30 - 7:00	FTX 351

Come to office hours: 4-5:30 MON

Ask questions: Don't be shy to ask a question during the lecture. Plus, I am always available for questions before and after lecture (in the classroom or in the hall). You can also email me.

Use the textbook: *Calculus for the Life Sciences: Modelling the Dynamics of Life* by Frederick Adler and Miroslav Lovric. There are two editions of this textbook, some available used. Either of them will work for this course; the newest has geese on the cover.

Use MapleTA: Homework assignments are to be completed online using MapleTA. They will be due each Monday night. You will need to purchase a license for MapleTA in order to log in; instructions will be posted on Brightspace. Start the homework early each week and use the instant feedback as a tool to measure your learning.

Get mathematically fit: Do 5 problems every day : from MapleTA, from the Course Guide and DGD Workbook, from the textbook. You must do this to actually learn Calculus — reading the notes and understanding the theory is necessary but insufficient. Work regularly throughout the term.

Course Guide: (Available on Brightspace) For each lecture : a one-page summary of the main ideas, together with questions from exams and homework of previous years.

DGD Workbook: (Available on Brightspace) For each lecture : some of the recommended exercises, with exam-style space for your answer. Most weeks, you will do a subset of these problems in the DGD.

Check Brightspace: Announcements will be posted there, and you will also find links to MapleTA, to the public website *https : //mysite.science.uottawa.ca/bdionne/teaching/Mobius_en.html*, and to the Course Guide and various lecture notes. Your interim grades will also appear here; be sure to verify their accuracy throughout the term.

How you will be evaluated

MapleTA homework: 10%: There will be weekly assignments on MapleTA, due Monday nights, worth a total of 10% of your final grade. Their purpose is to help you learn the material and receive immediate feedback, and are a supplement to textbook exercises.

Two tests: 20% each: There will be two midterms, written in class, each worth 20% of your final grade:

Test 1: THU, October 3, 2019, in class. Covers the first 7 lectures, including the high school material reviewed in the first two lectures.

Test 2: THU, November 14, 2019. Covers material of lectures 8 through 15.

If you miss a test for a valid reason, or if you perform better on the final exam, then the weight of your midterm will be transferred to the final. There are no make-up tests. Statistics show that students who write both tests do better on the final than those who missed a test.

Final exam: 50%: There will be a 3-hour final exam, scheduled during the final exam period, December 7 to December 20. It will cover all the material taught in the course and be worth 50% of your final grade. (The final exam schedule will be posted around reading week; **do not** book your flight home until you know your exam schedule.)

Exceptions: If you fail the final exam with a grade of less than 40% then your final grade is an F, regardless of interim grades.

Test procedures: You may not enter after or leave before 20 minutes have passed from the beginning of a test. You must present your student card if asked. Any questions concerning the marking must be submitted to the professor within 5 working days of the return of the graded tests.

Calculators: Only Faculty-approved calculators are permitted on Tests and the Final Exam. These are: **Texas Instruments TI-30 and TI-34, Casio FX-260 and Casio FX-300**. These are inexpensive scientific and non-programmable calculators approved for use in science courses.

Additional resources

Math Help Centre: The *Mathematics Help Centre* http://science.uottawa.ca/en/faculty-services/undergraduate-studies#MAT, in STEM 207, is staffed by teams of friendly graduate students who will answer your questions.

- Hours : Mon–Wed 10:00–7:00, Thu 10:00–5:00 and Fri 10:00–3:00 (Sep 10 to Nov 30; special hours during the study break and the final exam period).
- Don't ask technical questions about MapleTA — consult the FAQ instead!
- You may ask for help on how to approach a MapleTA problem in the help center, but you must solve the problem on your own. In particular, while you may use your device to **show the question** to a tutor, you are not permitted to **enter an answer** while with the tutor. It's **your** homework.

Study groups: Several residences and student groups offer study groups for MAT1330. Working with others, explaining your answers and talking about approaches can help you learn.

Accessibility: The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. The University of Ottawa is committed to ensure that persons with disabilities have equal access to its services and events.

If you are in need of accommodation during this course due to a disability, please consult with Access Services as soon as possible: http://sass.uottawa.ca/en/access.

MapleTA

MapleTA login: (See Brightspace.) Always use the given login page; searching the web for MapleTA can and will lead you to login sites for other universities, which won't work.

MapleTA FAQ: http://aix1.uottawa.ca/~bdionne/teaching/MapleTA_en.html
When something does not work, please consult the FAQ *before* contacting your professor.

Read the solutions: Always read through the solutions to the MapleTA assignments, which give you the model for what your test solutions should look like.

Self Regulated Learning

What it's about: Self-regulated learning is about developing learning skills and strategies to improve your success in university, your career, and your personal life. It implies thinking about how you learn, developing a growth mindset, setting clear (SMART) goals and developing effective study strategies that work for you.

SRL module: An interactive Self-Regulated Learning module has been added to our course on Brightspace, developed by Dr. Alison Flynn, University Chair in Teaching at uOttawa. It addresses general learning strategies, and additional learning strategies and learning outcomes specific to MAT1330 and its midterms and exam have been integrated into it. A less extensive version, touching on only study strategies and learning goals for MAT1330 has been integrated into our Course Guide.

Value: You will find learning about Self-Regulated Learning useful and helpful, in this intense first year of your studies; it is a kind of meta-cognition that gives you insight into how your mind works. The first module has 13 activities and is an excellent way to start the semester — it is applicable to all of your courses.

Academic regulations

Prerequisites: Completion of MAT1339 or Ontario 4U Calculus and Vectors (MCV4U), or an equivalent, with a passing grade is required for registration in this course. The courses MAT1330, MAT1300, MAT1308, MAT1320 cannot be combined for credit. If you are considering changing programs, please speak with your professor or your academic advisor about your options.

Academic fraud: Please consult the University regulations on academic fraud § 14:
https://www.uottawa.ca/administration-and-governance/policies-and-regulations.
There is no excuse for fraud; in particular, ignorance is not an excuse.

Devices on tests: **Cellular phones**, unauthorized electronic devices, (including **non-Faculty-approved calculators**) or course notes are not allowed during tests and exams. Phones and devices (including Smartwatches) must be turned off and put away in your bag. Do not keep them in your possession, such as in your pockets. **If caught with such a device or document, academic fraud allegations may be filed which may result in you obtaining a 0**

(zero) for the exam. Therefore: come to your exams with a plan of how to store your device away from your person.

Statement on prevention of sexual violence:

The University of Ottawa does not tolerate any form of sexual violence. Sexual violence refers to any act of a sexual nature committed without consent, such as rape, sexual harassment, or online harassment. The University, as well as student and employee associations, offers a full range of resources and services allowing members of our community to receive information and confidential assistance and providing for a procedure to report an incident or make a complaint. For more information, visit: http://www.uottawa.ca/sexual-violence-support-and-prevention

Sessional dates:

Term dates: September 4 to December 3, 2019
Reading week: October 13 to 19, 2019

Last updated: August 13, 2019