

Course Outline Form: MATH 1090 – W 2022

General Information

Course Title: **MATH 1090 – Elements of Calculus II, W (3-1) [0.50]**

Course Description:

This course will expand on integration techniques, and introduce students to difference and differential equations, vectors, vector functions, and elements of calculus of two or more variables such as partial differentiation and multiple integration. The course will emphasize content relevant to analyzing biological systems, and methods will be illustrated by application to biological systems.

Prerequisite(s): 1 of IPS*1500, MATH*1080, MATH*1200

Restriction(s): IPS*1510, MATH*1210, MATH*2080

Credit Weight: 0.5

Academic Department (or campus): Mathematics & Statistics

Campus: Guelph

Semester Offering: Winter 2022

LEC Mon 10:30AM - 11:20AM <u>ROZH</u> , Room 103 LEC Wed, Fri 10:30AM - 11:20AM <u>AD-S</u> , Room VIRTUAL NOTE: All classes are Virtual during Week 1 & Week 2	LAB Fri 02:30PM - 03:20PM <u>ALEX</u> , Room 200 NOTE: All LABS are Virtual during Week 1 & Week 2	EXAM Mon 07:00PM - 09:00PM (2022/04/25) Room TBA
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Instructor Information

Instructor Name: Monica Gabriela Cojocar

Instructor Email: mcojocar@uoguelph.ca

Office hours: Online – TEAMS – schedule TBD in 1st week of class

GTA Information: Michael Dube, Elkhalf Mutjaba, Hema Hemraj

Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

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For information on current safety protocols, follow these links: <https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/>
<https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces>

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Course Content

Specific Learning Outcomes:

The course will teach techniques to analyze and solve problems involving integrals, differential equations and their generalization to multivariate functions. This course will contain:

1. integration techniques: substitution rules, integration by parts, partial fractions;
2. separable differential equations, equilibria and models;
3. vectors, matrices, operations with matrices, eigenvalues and eigenvectors;
4. multivariate calculus: functions of 2 or more variables, partial derivatives, differentiability and gradients, optimization of functions on R^n .
5. Linear systems of differential equations, equilibria, stability and models.

Learning objectives consist of students: being able to recognize and execute appropriate integration of functions of 1 variable, being able to solve 1st order linear differential equations and systems; being able to recognize and work with partial derivatives and linearization of vector functions. Additional material needed for solving differential equations, such as vectors and matrices, will be included and students are expected to be able to work with these as far as solving differential equations. Students are expected to prove their proficiency in learned material in class tests and final exam.

Labs: This course has a 1 hour Lab every week on Friday. **PLEASE NOTE: the first 2 labs (in Weeks 1 & 2 respectively will be held online!).** The lab will be used to train students on course material so that they can absorb more examples and problems, and so that they can be able to complete their practice problems, quizzes, term tests etc. Attendance in Lab is strongly recommended. Monday lectures, as covid-19 situation permits, will be held in-person, respecting all UoG covid-19 protocols. Monday lectures will also be used for the 3 term tests students are scheduled to write during the semester.

Course Assignments and Tests:

For clarity, the below table refers to:

Week 1 of classes = Week of Jan. 10, 2022

READING WEEK: Feb 21-25, 2022

Week 12 of classes = Week of April 4th, 2022

Assigned work	Date Mondays	Location: in person in class time	Location: Online	Contribution to final mark
Quiz**	Jan. 10		12am-11:59pm	Warm – up - no grade
Quiz 1	Jan 17		10am-11:59pm	3%
Quiz 2	Jan 24		10am-11:59pm	3%
Test* 1	Jan 31 (W4)	In class at lecture time, duration 50 min		12%
Quiz 3	Feb 7		10am-11:59pm	3%
Quiz 4	Feb 14		10am-11:59pm	3%
Test 2	Feb 28 (W7)	In class at lecture time, duration 50 min		15%
Quiz 5	Mar 7		10am-11:59pm	3%
Quiz 6	Mar 17		10am-11:59pm	
Test 3	Mar 21 (W10)	In class at lecture time, duration 50 min		15%
Quiz 7	Mar 28		10am-11:59pm	3%

FINAL EXAM:

Quizzes (best 6 out of 7 = 18%) and term tests (42%) = 60% Final exam weighting: 40%

Course Resources

Recommended Text: Calculus for Biology and Medicine, 4th edition by Neuhauser & Roper.

Instructor's Notes will be provided via the Courselink site of the course. They are not completely self-contained, so the use of a textbook is highly recommended, but they can be used in conjunction with any textbook treating the same topics. **Students relying on Instructor's Notes alone cannot be guaranteed good performance in this course. Independent reading and studying is necessary.**

Course Policies

Email communication with Instructor:

- Student emails will be replied to on a first-come basis, within regular working hours, in accordance with 2022 provincial regulations. If multiple emails concern an issue for the entire class, the Instructor will email the class list and/or post relevant info on the Courselink site under "Announcements". Students SHOULD USE their University of Guelph emails to communicate.
- The Instructor will not answer practice or quiz questions by email. Help is available during the Office Hours posted above, at the Learning Center (online) on a first-come basis and at the end of each online class (Wed & Friday) for approximately 10-15min. TAs and Instructor will cooperate in providing plenty of office hours during the semester, especially before the 3 term Tests.
- **Should a student need to communicate 1-1 with the Instructor on specific/personal concerns or very specific course topics, a Doodle Poll will be circulated every Friday for a sign-up sheet for the following Saturday morning. Usually these will be 10min, 1-1, TEAMS meetings with the Instructor.**

Quizzes:

- Will be posted online on the Courselink page, according to the dates specified in the above Table. **PLEASE NOTE: you will need Respondus Lockdown Browser and Camera Monitor installed in order to take these quizzes anytime in the time interval posted. If you have an issue with the above monitoring system, please contact the Instructor by email as soon as you can, no later than Jan. 16, 5PM and explain your issue so we have a chance to address it.**
- Quizzes are graded mostly automatically in Courselink. Marks will be released on the weekend after each test. The correct answer key will be uploaded for each Quiz after marks are released.

Term tests:

Study materials for Tests will be posted on Courselink. These will be on top of problems in Labs on Fridays, as well as on top of all problems discussed in lectures. Quizzes are also used to prepare students for Tests.

Grading Policies

All marked Tests will be hand graded and returned to students within 7 calendar days, in class Mondays, Covid-19 permitting. After that, any remaining marked tests can be picked up at the time student hands-in the next test, in class.

Solution and marking scheme for all tests will be uploaded on Courselink after the hand-in dates.

Any grading concerns should be submitted by email to the Instructor up to 2 calendar days after solutions and marking scheme have been posted.

For further grading procedures please refer to:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-grds.shtml>

Please note that these policies are binding unless academic consideration is given to an individual student.

University Policies

Email Communication As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

When You Cannot Meet a Course Requirement. When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

Drop Date. Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

Copies of Out-of-class Assignments. Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Accessibility. The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student. When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway. Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability. Use of the SAS Exam Centre requires students to book their exams at least 14 days in advance and not later than the 40th Class Day. For Guelph students, information can be found on the SAS website <https://www.uoguelph.ca/sas> For Ridgetown students, information can be found on the Ridgetown SAS website <https://www.ridgetownc.com/services/accessibilityservices.cfm>

Academic Integrity. The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community- faculty, staff, and students- to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08- amiscconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Recording of Materials Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs. Academic Calendars <https://www.uoguelph.ca/academics/calendars>

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Illness Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g. final exam or major assignment).

Covid-19 Safety Protocols For information on current safety protocols, follow these links:

<https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>

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Mental Health Services:

One out of every five students in Canada experiences some sort of mental health issue at some point in their academic career. If you find yourself facing a mental health crisis, or just need to talk to someone, please consider taking advantage of one of the following resources available to University of Guelph students:

Counselling Services: Visit the Counselling Services website (<https://wellness.uoguelph.ca/counselling>) to get information on resources available to you, both online and in-person. You can also visit them at Health Services (J.T. Powell Building, ext 53244) where they offer individual and group counselling sessions by appointment or walk-in.

Student Support Network: is located in the Wellness & Education Promotion Centre in the J.T. Powell Building and offers confidential, peer-based, drop-in support.

Good2Talk: (1-866-925-5454) is a free, 24/7 student hotline that provides professional counselling and referrals for mental health, addictions and well-being.

Here 24/7: [1-844-437-3247](tel:1-844-437-3247) specializes in assessment, referral and appointment booking and is available 24/7 for crisis support.

You are not alone and you will not be judged for asking for help.