MATH*1080 Elements of Calculus I – W23
Department of Mathematics and Statistics, CEPS
University of Guelph, Guelph Campus

Course Description

MATH*1080 Elements of Calculus I Fall and Winter (LEC: 3, LAB: 1) [0.50]
This course provides an introduction to the calculus of one variable with emphasis on mathematical modelling in the biological sciences. The topics covered include elementary functions, sequences and series, difference equations, differential calculus and integral calculus.

- Offering(s): Also offered through Distance Education format.
- Prerequisite(s): 1 of 4U Advanced Functions, 4U Advanced Functions and Calculus or equivalent
- Restriction(s): IPS*1500, MATH*1200
- Department(s): Department of Mathematics and Statistics
- Location(s): Guelph Campus

Instructor/TA & Office	Lec/Lab	Mtg. Location, Time & Days	Email
*S. Gismondi (MACN 510)	Lec 01	ROZH 103 09:30 – 10:20 MWF	gismondi@uoguelph.ca
*A. Lee (MACN 526)	TA Lab 01	ROZH 103 12:30 – 13:20 F	alee15@uoguelph.ca
*T. Chaity (MACN 527)	TA for both		tchaity@uoguelph.ca
*F. Combert (MACN 527)	TA for both		fcombert@uoguelph.ca

*See CourseLink ("Help/FAQ" tab) for Office Hours

Required Materials

- COMPUTER/DEVICE, browser & internet access to support / make use of materials below.
- SOFTWARE:
- ***CourseLink*** at https://courselink.uoguelph.ca/shared/login/login.html
  - ***CourseLink is our "go to" for all course related "anything".***
  - For all students, CourseLink access is extended through to the end of the first week of classes of the following semester to allow for a review of your final examination grade in order to decide about requesting a Course Re-Grade Request.
  - For all students that are granted a deferred final examination privilege, CourseLink access is extended to the examination date in order to allow for preparation.
- ***MS Teams*** at https://teams.microsoft.com/_#/school//?ctx=teamsGrid
- ***MS OneNote*** at https://www.office.com/launch/onenote?auth=2

How to Download & Install MS Teams and MS OneNote

Download the suite of Office 365 Applications (at least Teams and OneNote). That is, when using Teams or OneNote, run the applications on your computer or device rather than in a browser on your device. Local applications are preferable. To download these applications from UoG, follow the instructions below. You can also download these applications in other ways too, if you happen to have options other than UoG.

- Sign into your web-based (Outlook) UoG eMail. In the upper left hand corner of your Outlook window, find the little 3x3 grid. It looks like dots/mini-squares - decoration - if you weren't paying much attention. The grid is just to the left of the word "Outlook".
- Click on the grid. A window will appear, and in the upper right hand corner of the window, find the "Office 365 -->" hyperlink.
- Click on "Office 365". A new window will appear, and in the upper right hand corner of the window, find the "Install Office" pull down menu button.
- Click on "Install Office", choose to install the apps, and install them.

When you click on a link to Teams or OneNote from our CourseLink site, your browser might ask you whether or not you want to run your own application (local install as above) rather than the browser. RUN YOUR OWN APPLICATION & save as default. You will then be joined to the "MATH*1080W23 Team Mtg / Class Notebook" via your installed apps.

Required Materials continued …

- TEXT BOOK:
  - *Math 1080 Elements of Calculus Course Notes and Laboratory Manual, 8th. Edition.* Author: Joseph Cunsolo, Publisher: Pearson Custom Publishing, © 2015. Go to our bookstore in MacNaughton bldg. OR you can order the same paper copy textbook and/or eText access code online from the bookstore at https://bookstore.uoguelph.ca/p-9865-math1080-custom-course-notes-lab-manual.aspx. Details about purchasing and accessing the eText can be found under the Help / FAQ tab in CourseLink.

IN-PERSON Course Delivery

This course is planned for in-person delivery via three lectures and one lab seminar each week together with online assignments, online assessments and an online final examination.

- **Always attend class & lab. Bring your course notes / textbook with you.** While lectures and/or labs and/or office hours, including discussion and other activities might ALSO be presented online – in extreme special cases, don't assume these presentations are recorded/available online.
- **Always take your own notes / write notes in your course notes / textbook.** While lectures and/or labs and/or office hours, including discussions and other activities often generate notes that might ALSO be captured in OneNote, don't assume these notes are recorded/available online.
- **Access assessments and the final examination** by clicking on the "Assessments & Final Examination" tab in the CourseLink navigation bar.
- **Access reference materials** by clicking on either the "Past Course Materials" tab or the "Supplementary Materials" tab in the CourseLink navigation bar.

ONLINE Course Delivery – Our Alternate Delivery Format

IF WE ARE MOVED ONLINE e.g. pandemic resurgence, this course has a planned online delivery alternate format. Live lectures and/or live labs and/or live office hours, called *online video feed activities*, will be conducted via Teams as originally scheduled. With exception to Office Hours, all online video feed activities will be recorded and made available to all. Links will be posted in CourseLink.

- Join an online video feed activity via Teams (lecture/lab/officer hour) by clicking on the corresponding activity link under the "Video Activities (Teams)" tab in the CourseLink navigation bar. You can also join online video feed activities via the General channel on Teams.
- Access a recorded video feed activity by clicking on the "Recorded Lectures & Labs" link under the "Video Activities (Teams)" tab in the CourseLink navigation bar. Then select and click on the corresponding recorded video feed activity link i.e. by name and date of activity. You can also access recorded video activities via the General channel on Teams. Office hour meetings are never recorded.
- Online video feed activities generate notes captured in OneNote, and will be made available to all. Links will be posted in CourseLink. Access lecture and lab notes via OneNote by clicking on the "Class Notes & eText" tab in the CourseLink navigation bar and then selecting the "Lecture & Lab (OneNote) link.
- **Access assessments and the final examination** by clicking on the "Assessments & Final Examination" tab in the CourseLink navigation bar.
- **Access reference materials** by clicking on either the "Past Course Materials" tab or the "Supplementary Materials" tab in the CourseLink navigation bar.

Learning Outcomes

- Graph a foundation set of single variable functions and their inverses, including complete knowledge of domains and ranges (using interval notation), including stretches/compressions/reflections in both axes, translations, and limited function compositions. These functions include, but are not limited to: x, x^{-1}, $x^{1/3}$, $x^{1/2}$, x^2, x^3, $|x|$, $[[x]]$, $\sin(x)$, $\cos(x)$, $\tan(x)$, e^x, $\ln(x)$, b^x, $\log_b(x)$, 10^x, $\log(x)$.
- Intuitively explain and contrast one-to-one and onto single variable functions and their inverses, including a discussion of inverse functions, restricted domains and ranges.
- Interpret biological models as single variable functions. This includes demonstration of knowledge of periodicity, determining parameters of least squares models, allometric and exponential functions, including demonstration of an introductory understanding of half-life, population doubling, piecewise defined functions, discrete first order-linear-constant coefficient homogeneous and non-homogeneous difference equations, steady state, fixed points, limited series and corresponding closed form solutions, and some integral equations.
- Intuitively explain and contrast one sided and two sided limits of single variable functions.
- Define a continuous single variable function (on an open interval).
- Define the derivative of a single variable function in terms of the limit of a difference quotient.
- Explain, compare and distinguish details between continuous and differentiable single variable functions.
- Explain, compare and distinguish details between average rate of change and instantaneous rate of change.
- Differentiate and implicitly differentiate single variable functions using the product rule, quotient rule and chain rules as needed.
- Take log transforms as needed in order to differentiate functions of the form $f(x)^{g(x)}$.
- Compute the equation of a line tangent to a function at a point for both implicit and explicit functions.
- Compute and make use of differentials with respect to approximations of single variable functions. Compute and use Taylor series approximations of single variable functions.
- Compute second derivatives of single variable functions.
- Explain and graph increasing and decreasing single variable functions, concave up and concave down single variable functions, and local and global extrema.
- Explain, compare and distinguish details between critical points, extrema, maxima, minima, possible points of inflection and points of inflection.
- Solve simple related rate and optimization problems.
- Define the indefinite integral in terms of anti-differentiation.
- Compute indefinite integrals of single variable functions.
- Compute the area under a single variable function, and the area bounded between two single variable functions as a Riemann sums. Recite the Fundamental Theorem of Calculus.
- Compute the area under a single variable function above the x-axis, and the area bounded between two single variable functions as definite integrals.
- Compute the area of a region bounded by more than two single variable functions with an ability to reverse the roles of x and y as needed for simplification. Explain, compare and distinguish details between computing the value of a definite integral versus computing the area under a single variable function above the x-axis.

Procedures Concerning Lecture, Lab and Homework
Always reference your *partially completed* "Course Notes and Laboratory Manual" (that you purchased) in every lab and lecture session.
- *Lecture material* is presented three times each week, for weeks 1 - 11. In week 12, only two lectures are presented. See the last page of this outline for a schedule of dates, material covered and assessment activities. Lecture material is divided into 15 sections, and each section concludes with an exercise module.
  - *Homework Task I (not for marks).* Each exercise module is to be completed as independent study, <u>not</u> handed in. Answers are in our course manual.
- *Lab material* is presented once each week in lab, for weeks 1- 11 with exception to weeks 5 and 9 where lab material is completed independently on your own time. Each lab consists of two sets of word problems, Parts A & B (except labs 5 and 9 – consisting only of Part B). Part A is completed together in lab. Part A of lab 12 is completed in lecture in week 12. Solutions to all Part A labs are also posted in CourseLink ("Class Notes & eText" tab) and Teams.
  - *Homework Task II (not for marks).* Part B of each lab is to be completed as independent study, <u>not</u> handed in. Answers for Part B are in our course manual.

<u>How You Are Assessed In This Course - Special accommodation? See Accessibility</u>
There are three mastery assignments, two assessment assignments and one final examination – all online.

☞ **3 x 5% Multiple Choice Online <u>Mastery Assignments</u> performed in weeks 3, 7 and 11**. You are allowed to use a calculator, unlimited attempts, and **up to** 6 days and 18 hours contiguous time – assuming that you start when these assignments first become available. Otherwise you will have less time. A highest scoring attempt is the grade you are assigned. Each mastery assignment takes about 15 minutes. **<u>After attempting a mastery assignment in CourseLink, you MUST formally submit it for grading. An unsubmitted attempt is not graded and DOES NOT CONTRIBUTE to your final grade. NOTE: ! YOU ARE EXPECTED TO SCORE PERFECT ON EACH MASTERY ASSIGNMENT (via multiple attempts)!</u>**
- **Online Mastery Assignment 1, taken Monday January 23 - Sunday January 29.**
- **Online Mastery Assignment 2, taken Monday February 27 - Sunday March 5.**
- **Online Mastery Assignment 3, taken Monday March 27 - Sunday April 2.**
☞ **THERE ARE NO ALTERNATE ONLINE MASTERY ASSIGNMENT DATES NOR MAKE-UP ONLINE MASTERY ASSIGNMENTS. <u>OTHER THAN EXTREME CIRCUMSTANCES, THERE ARE NO EXCEPTIONS. MISSED ONLINE MASTERY ASSIGNMENTS ARE ASSIGNED A GRADE OF ZERO.</u>**

☞ **2 x 21% Multiple Choice Online <u>Assessment Assignments</u> performed on the Friday of weeks 5 and 9.** You are allowed to use a calculator, one attempt, and **up to** 18 hours contiguous time – assuming that you start when these assignments first become available. Otherwise you will have less time. Each assessment assignment takes about 1 hour. **<u>After attempting an assessment assignment in CourseLink, you MUST formally submit it for grading. An unsubmitted attempt is not graded and DOES NOT CONTRIBUTE to your final grade.</u>**
- **Online Assessment Assignment 1, taken Friday February 10.**
- **Online Assessment Assignment 2, taken Friday March 17.**
☞ **THERE ARE NO ALTERNATE ONLINE ASSESSMENT ASSIGNMENT DATES NOR MAKE-UP ONLINE ASSESSMENT ASSIGNMENTS. *IF* for any assessment assignment grade it turns out that your final examination grade IS HIGHER, then your assessment assignment grade <u>IS AUTOMATICALLY REPLACED</u> by your final examination grade!!**

☞ **1 x 43% Multiple Choice Online Assessment Final Examination.** You are allowed to use a calculator, one attempt, and **up to** 36 hours contiguous time – assuming that you start when the final examination first becomes available. Otherwise you will have less time. The examination takes about 2 hours. **After attempting the final examination in CourseLink, you MUST formally submit it for grading. An unsubmitted final examination attempt is not graded and DOES NOT CONTRIBUTE to your final grade. NOTE that by not submitting your final examination attempt, your final grade is automatically assigned "INC". A committee will later decide whether or not you may be granted a deferred final examination attempt. The instructor is not allowed to make this decision.**

- **Online Assessment Final Examination is scheduled for 14:30 – 16:30 on Monday April 24, and is available to be taken between noon Monday April 24 through midnight April 25.**
- ☞ **THERE ARE NO ALTERNATE ONLINE ASSESSMENT FINAL EXAMINATION DATES NOR MAKE-UP ONLINE ASSESSMENT FINAL EXAMINATIONS. A missed online final examination results in an "INCOMPLETE" code assigned as a final grade. A university committee - beyond my control – decides pass/fail/re-write and a numeric grade.**

Procedures for Submitting Mastery and Assessment Assignments and the Final Examination
- Access online mastery and online assessment assignments, and the online final examination by clicking on the "Assessment & Final Examination" tab in the CourseLink navigation bar. Then click on the corresponding assessment and complete all questions, and then submit it for grading.

Procedures for Obtaining Mastery and Assessment Assignment Feedback & Solutions
- Grades are posted at noon on the Monday following each assignment.
- Choose the online mastery / online assessment assignment / online final examination by clicking on the "Assessments & Final Examination" tab in the CourseLink navigation bar. Then click on the corresponding assessment / final examination. Beside the title of the assessment is a drop down menu option (little upside down triangle). Click it.
- Select "Submissions" and then you can see all your attempts (only one attempt for the assessment assignments / final examination), how they were scored including the correct answers, and the score for each attempt.
- *For answers and solutions to your assignment questions ALWAYS ATTEND office hours (although solution details are also posted). Myself and our TAs are delighted to present and explain solutions to any of the assignment questions during office hours, also captured in OneNote for later reference. An abundance of office hours are scheduled!!*

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.
- 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 make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.
- More information: www.uoguelph.ca/sas

HELP From the Mathematics & Statistics Department

The Mathematics and Statistics Department operates a drop-in learning centre. See https://mathstat.uoguelph.ca/tutoring. This is YOUR RESOURCE for support with lab and course-work related problems. The TA's ARE FRIENDLY. They KNOW MATH*1080 material, and they are usually AVAILABLE TO HELP YOU 6 hours a day! Our learning centre is located on the third floor of the McLaughlin Library. During the 12-week scheduled class times, scheduled 'open times' are:

Days	Monday	Tuesday	Wednesday	Thursday	Friday
Times	09:30-15:30	10:00 - 16:00	09:30-15:30	10:00- 16:00	09:30-14:30

If we are moved online e.g. pandemic resurgence, the Mathematics and Statistics Learning Centre is likely to revert to an online CourseLink support service. See below.
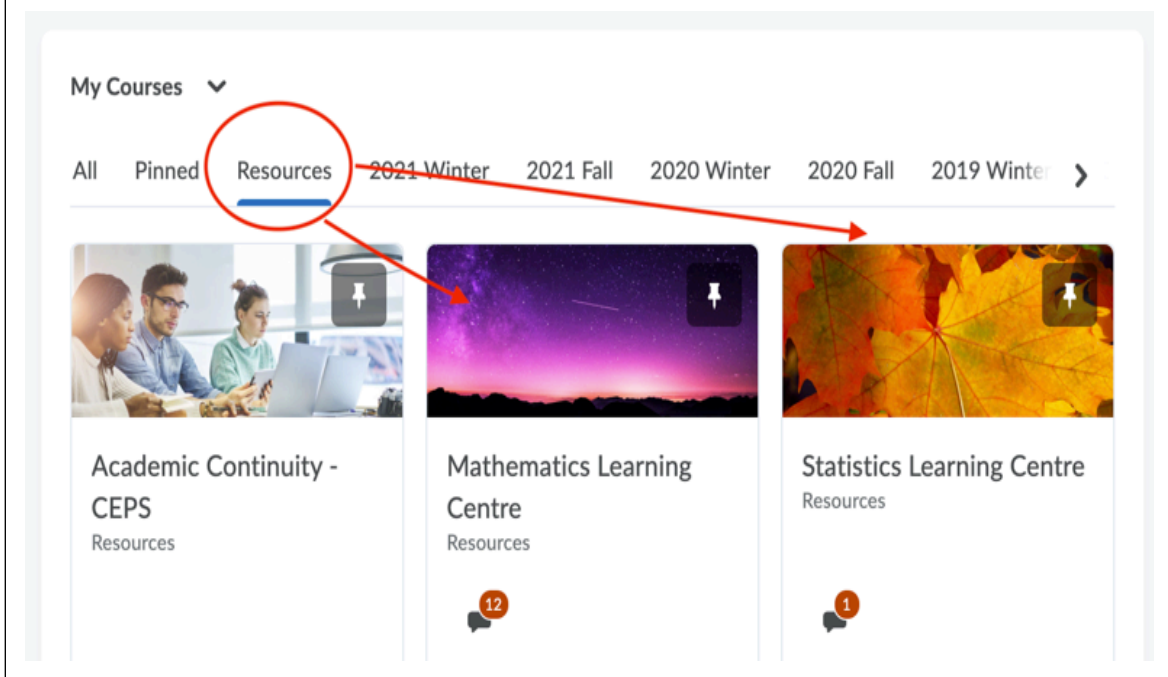
HELP From Supported Learning Groups (SLGs)

The SLG Program has provided course specific support for thousands of students since 1998.They are an enthusiastic group of undergraduate students and professional staff who are dedicated to helping students succeed. SLG sessions are free peer-led study groups. They help you navigate course material and will show you new ways to approach difficult concepts. The sessions are designed for everyone in the class, regardless of your comfort with the material. See https://www.lib.uoguelph.ca/writing-studying/studying-resources-workshops/slgs and https://www.lib.uoguelph.ca/about/about-our-teams/learning-curriculum-support/supported-learning-groups-slg

More Learning Resources

We support undergraduate and graduate students develop the skills and strategies you need to learn effectively and achieve your goals. Visit https://www.lib.uoguelph.ca/writing-studying/studying-resources-workshops

Instructor Policies

Group Work for Assessment

There is no group work regarding assessment. All assessment is generated by independent completion of assignments and the final examination.

About Recording of Labs, Lectures, Conversations, Casual Meetings, Office Hour Meetings and All Written, Recorded, Presented Materials, Utterances, Stories AND EVERYTHING related and vaguely related to information acquired in the course of study re: MATH*1080 IS ALLOWED TO BE RECORDED – **ONLY FOR THE COMPONENT(S) THAT GISMONDI PRESENTS**. THIS IS GISMONDI'S WRITTEN PERMISSION to record these materials, restricted for use of study so that you can complete the course. DO NOT violate copyright laws. DO NOT make posts (including emails) of these materials e.g. postings to YouTube or other social media. DO NOT copy/repost comments in chats, messages, tweets etc. These ARE NOT public materials i.e. password protected in Teams, Notes and CourseLink. Of special note, the textbook is copyright material from Pearson Publishing – author Joe Cunsolo. See http://www.cmec.ca/Publications/Lists/Publications/Attachments/291/Copyright_Matters.pdf for details, limited permissions etc. regarding copyright materials in Canada.

About Illness & Sudden Illness re: Assessment Assignments and the Final Examination

If prior to an assessment assignment or the final examination, and even during an assessment assignment or the final examination, you are/become ill and are unable to complete, YOU MUST 1) seek help for your illness that very instant and 2) later when you become well, obtain documentation as per "Undergraduate Degree Regulations: Illness or Compassionate Reasons". You will be excused from the assessment assignment or final examination and will complete these requirements as per regulation. However, *you cannot re-write/re-take, be excused or change the grade that you receive, if AFTER COMPLETING AN ASSESSMENT ASSIGMENT OR FINAL EXAMINATION, you indicate that you were/became ill. Illness (inc. scheduled surgery) or compassionate reasons can be accommodated in advance/during completion of the task in accordance with University policy, but RARELY after completion of the task.*

THEREFORE – IN THE CASE THAT YOU INCLUDE/EMAIL MEDICAL NOTES, WRITTEN/EMAILED EXPLANATIONS RE: PERFORMANCE ISSUES ETC. ATTACHED TO/WRITTEN/EMAILED ON YOUR ASSESSMENT ASSIGNMENT OR EXAMINATION (OR IN A SAS ENVELOPE):

- *YOUR ASSESSMENT ASSIGNMENT(S) OR THE FINAL EXAMINATION IS NOT GRADED*
- *YOUR NOTE/EMAIL/COMMUNICATION IS INTERPRETED AS A REQUEST TO BE EXCUSED FROM THE ASSESSMENT ASSIGNMENT/FINAL EXAMINATION.*

Not Withstanding" Clause a.k.a. What About Unforeseen Fateful Events?

When fate intervenes e.g. weather - emergency – work disruptions & other fateful events, and the conduct of the course falls outside of my control in a way that lectures, labs, assessment assignments etc. might need to be cancelled/rescheduled, then please refer to CourseLink for further instruction *which may now deviate in any manner whatsoever from published course outlines, past cases and any other commitments previously made by me with or without knowledge of these unforeseen fateful events.*

➔ ***IN THE EXTREMELY UNLIKELY EVENT THAT ALL COMMUNICATIONS FAIL (strike/lock-out, pandemic, war, terrorism etc., AND EVEN CourseLink is unavailable):***

1. ***DURING THE FIRST TWO WEEKS, try to keep to our schedule (last page) independently however you can manage i.e. try and stay current so that it'll be easier when we finally resume from where we left off.***
2. ***BEYOND TWO WEEKS, it's a disaster. We'll worry about it later, if ever.***

University of Guelph Policies

Email Communication

As per university regulations, all students are required to check their <uoguelph.ca> 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. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration.

Drop Date

Courses that are one semester long must be dropped by the end of the last day of classes; two-semester courses must be dropped by the last day of classes in the second semester. The regulations and procedures for Dropping Courses are available in the Undergraduate Calendar.

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 make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

More information: www.uoguelph.ca/sas

Academic Misconduct

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 discourages misconduct. 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.

The Academic Misconduct Policy is outlined in the Undergraduate Calendar.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate 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 which apply to undergraduate, graduate and diploma programs.

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.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email.

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-campuses/how-u-of-g-is-preparing-for-your-safe-return/
- https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces

Please note, that these guidelines may be updated as required in response to evolving University, Public Health or government directives.

*MATH*1080W23 "Get to work!!" Schedule*

Lecture, Lab & Module Schedule. Post this schedule on your fridge! Do it now! Right now!	Online Assignments Schedule
Week 1: Jan. 9-13 • Lectures as regularly scheduled. Complete module(s) 1. • Approx Pgs: 1-28. Interval notation, domain, range, graphs of single variable functions, even/odd functions, translations, reflections, stretches, lines, quadratics, polynomials. • Lab 1 A – in lab. Complete Part B as independent study.	
Week 2: Jan. 16-20 • Lectures as regularly scheduled. Complete module(s) 2 & 3. • Approx Pgs: 29-60. Algebra of functions, function composition, one-to-one and onto functions, inverses, exponential and log functions, growth and decay models, introduction to the "drug" model and repeated dosing. • Lab 2 A – in lab. Complete Part B as independent study.	
Week 3: Jan. 23-27 • Lectures as regularly scheduled. Complete module(s) 4. • Approx Pgs: 61-90. Periodic functions, trigonometry and graphing and application to modelling. Allometric and exponential functions under log transforms, graphing and log-log scalings. • Lab 3 A - in lab. Complete Part B as independent study.	**Complete Online Mastery Assignment I during this week.** Usually covers lecture, module and lab material from weeks 1 & 2. Available on CourseLink under the "Assignments & Final Examination" tab. Always attend lecture and ask about these details!
Week 4: Jan. 30 - Feb. 3 • Lectures as regularly scheduled. Complete module(s) 5 & 6. • Approx Pgs: 91-118. Computing parameters of allometric and exponentials models. Introduction to discrete models, sequences and series. • Lab 4 A – in lab. Complete Part B as independent study.	
Week 5: Feb. 6-10 • Lectures as regularly scheduled. Complete module(s) 7. • Approx Pgs: 119-132. More sequences and series, general terms, closed form solutions, and first order linear constant coefficient difference equations. • Complete Lab 5 B as independent study.	**Complete Online Assessment Assignment I Friday February 10.** Covers lecture, module and lab material from weeks 1 through 4 inclusive. Available on CourseLink under the "Assignments & Final Examination" tab. Always attend lecture and ask about these details!
Week 6: Feb. 13-17 • Lectures as regularly scheduled. Complete module(s) 8 & 9. • Approx Pgs: 133-160. More difference equations i.e. steady state, equilibria, graphing difference equations, cobwebbing and ΔX_n. • Lab 6 A – in lab. Complete Part B as independent study.	
** WINTER BREAK ** February 20-24. NO CLASSES and NO LABS. **	
Week 7: Feb. 27 - Mar. 3 • Lectures as regularly scheduled. Complete module(s) NONE. • Approx Pgs: 161-188. One and two sided limits, continuity, difference quotients interpreted as slopes of secant lines and slopes of tangent lines. The derivative. • Lab 7 A – in lab. Complete Part B as independent study.	**Complete Online Mastery Assignment II during this week.** Usually covers lecture, module and lab material from weeks 5 & 6. Available on CourseLink under the "Assignments & Final Examination" tab. Always attend lecture and ask about these details!
Week 8: Mar. 6-10 • Lectures as regularly scheduled. Complete module(s) 10. • Approx Pgs: 189-216. Product and quotient rules. Tables of derivatives. Chain rule. Tables of foundation applications of the chain rule. Implicit differentiation. Higher order derivatives. Related rates. Using log transforms/compute derivatives. • Lab 8 A – in lab. Complete Part B as independent study.	

Lecture, Lab & Module Schedule. Post this schedule on your fridge! Do it now! Right now!	Online Assignments Schedule
Week 9: Mar. 13-17 • Lectures as regularly scheduled. Complete module(s) 11 & 12. • Approx Pgs: 217-240. Critical points, Maxima, minima inc. local versus global, first derivative test for max & min, concavity. Curve sketching. Max & min problems, optimization. The differential and applications. • Complete Lab 9 B as independent study.	**Complete Online Assessment Assignment II Friday March 17.** Covers lecture, module and lab material from weeks 5 through 8 inclusive. Available on CourseLink under the "Assignments & Final Examination" tab. Always attend lecture and ask about these details!
Week 10: Mar. 20-24 • Lectures as regularly scheduled. Complete module(s) 13. • Approx Pgs: 214-276. Taylor series. The anti-derivative, indefinite integrals. Chain rule in reverse and a table of integral rules. Riemann sums and applications. Total change. • Lab 10 A – in lab. Complete Part B as independent study.	
Week 11: Mar. 27 – Mar. 31 • Lectures as regularly scheduled. Complete module(s) 14. • Approx Pgs: 277-287. Fundamental Theorem of Calculus. Algebra of definite integrals. Area under a curve versus computing a definite integral. • Lab 11 A – in lab. Complete Part B as independent study.	**Complete Online Mastery Assignment III during this week.** Usually covers lecture, module and lab material from weeks 9 & 10. Available on CourseLink under the "Assignments & Final Examination" tab. Always attend lecture and ask about these details!
Week 12: Apr. 3-7. No Friday lecture. No Friday lab. • Lectures as regularly scheduled. Complete module(s) 15. • Approx Pgs: 288-296. Area bounded by two curves. Area bounded by more than two curves, and reversing the order of integration. • Lab 12 A – in lecture. Complete Part B as independent study.	