Course Outline
MATH 100: Calculus I
Fall 2021

Territory Acknowledgement

We acknowledge and respect the lekwungen peoples on whose traditional territory the university stands and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.

Instructors

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General Course Information

Number of Units 1.5

Note: Credit will only be granted for one of MATH 100, MATH 102, MATH 109.

Pre-requisites Either Principles of Mathematics 12 or Pre-calculus 12 with a minimum grade of B (73%), or MATH 120 with a minimum grade of C+, or MATH 100/109 pretest with a PASS.

MATH 100 or MATH 109? Students taking MATH 100 are expected to have seen some calculus in High School. Typically, this is the course Calculus 12 or equivalent. Students in MATH 109 **may** have seen calculus in High School but it is not assumed. There is no issue with a Calculus 12 student taking MATH 109. It is probably a bad idea for a student with **no prior exposure to calculus** to be in MATH 100. A good grade in either course will prepare a student well for MATH 101.

Learning Outcomes Calculus is the classical mathematical approach for studying continuously varying processes. Most students think of calculus as a set of tools (which it is) for analyzing problems from physics, chemistry or biology. But it is also a powerful toolbox for visualization and geometric analysis within mathematics and computational algorithms in computer science. In this course you will learn basic calculus tools and techniques, and how to apply them in a wide variety of contexts within science and engineering. You will also learn how to speak and write your calculus ideas and solutions using both mathematical symbols and English. Good mathematical writing (when you say the names of the symbols) is also good English writing! You will learn to bring a critical eye to calculus arguments, and to be able to explain

why a solution must be incorrect, or may not be complete. With this in mind, a big part of this course is about mathematical communication.

Topics Limits; continuity and asymptotes; derivative and tangent line; derivative computations and rules; chain rule; implicit differentiation and related rates; applications of derivatives; calculus word problems; linear approximation; Newton's method; antiderivatives; Riemann sums and area; the definite integral; fundamental theorem of calculus; integration by substitution. From the textbook, most sections from Chapters 2 - 5 inclusive.

Accessibility 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 Centre for Accessible Learning (CAL) as soon as possible. CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. See `http://uvic.ca/cal`. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Course Structure

Brightspace This course will be run under UVic's Brightspace LMS. In order to avoid confusion, we will put all materials under a single cross-listed Brightspace page: MATH 100 A01-A03 X. Everything you need for this course, and answers to (almost!) every possible administrative question will be found there if you know where to look. Individual course section Brightspace pages are still there, and you will be registered for one of them as well as the A01-A03-X page, but we will not be using them this term.

Lectures Attend all lectures. It is mainly during lectures that you will learn how to think about the material and how to approach more complex problems by breaking them into manageable steps. Come to lectures prepared. In some courses that means looking at the material in the textbook or course notes sections for that lecture (see Course Schedule on Brightspace) *prior to* attending lecture. In this course we also have a set of week-by-week pre-lecture material posted to Brightspace that will help you prepare for lectures.

Pre-lecture preparation Inside Brightspace you will find a set of week-by-week modules for pre-lecture preparation. Each consists of examples from the text, or from our Handbook and some links to YouTube videos that are designed to get you started thinking about the week's material **before you come to lecture**. Look under the link "Content→Course Materials by Week" on BrightSpace.

Weekly Homework Assignments Almost every week you will be directed to complete a Homework Assignment on the MyLab Math site (see below). These will be graded by the online system and the lowest two assignment scores will be dropped. Assignments are uploaded on Mondays and due the following Sunday at 10:59pm.

Weekly 30-minute Quiz These are similar to the MyLab Math Assignments, but they are timed. Once you start the quiz, you have 30 minutes to complete and submit.

Like assignments, quizzes will be released on Mondays with a Sunday night deadline, but now 11:59pm. They are graded by the system and the lowest two scores will be dropped. Do not attempt the quiz until you have completed that week's assignment.

Weekly Tutorial You are registered for a one-hour tutorial each week. Attend all tutorials! Tutorials are one of the most important components of the course. During the tutorial you will work through a set of assigned problems in groups. The tutorial instructor will monitor and answer questions from the group as required. At the end of the tutorial you will complete and hand in a tutorial "ticket" that proves you attended. There will also be a tutorial worksheet to complete in tutorial, or after, and to submit for grading before Tuesday (11:59pm) after the Monday tutorial. They will be submitted by scanning and uploading to Crowdmark. You must have submitted a ticket in order for your worksheet to be accepted for grading. The lowest two grades on the tutorial worksheets will be dropped.

Midterm Tests: There will be two midterm tests this term in Math 100, held on **Saturday October 16 and Saturday November 20**. These will be on-campus invigilated tests of 90 minutes duration starting at 9:00 am. Room assignments will be available in early September and announced on Brightspace. Each midterm test will count for 15% of your course grade. There will be no make-up tests or re-tests offered under any circumstances.

Final Examination A comprehensive, 3-hour final examination for Math 100 will be scheduled by the University. The date will be some time between December 9 and December 20, the UVic final examination period. The final exam will count for 40% of your course grade.

Gateway tests Approximately one week before each of the two midterms and before the final exam you will be given a Gateway Test through MLM. This is like a practice test, but for grades. Each Gateway test is worth 2% of your course grade. It is our experience that students who do not do well on a Gateway test perform poorly on the corresponding test (midterm or final exam). Try to do well on the Gateway tests.

Instructor Office Hours All three instructors will set aside two hours per week to meet with students. Some hours will be Zoom sessions and some will be face-to-face (F2F). Hours, and locations will be posted our Brightspace page. You may visit the office hour of **any** Math 100 instructor, no matter what section you are registered in. For F2F office hours, please respect distancing and masking protocols as mandated at the time by the Government, University or the instructor, when requested. The best use of office hour time is bring a specific problem you have attempted but that you were unable to solve, or for which you are uncertain about the correctness of your solution.

Specific Course Materials You Will Need

Textbook *Thomas' Calculus Early Transcendentals, 14th Edition*, Hass, Heil and Weir, published by Pearson/Prentice Hall. You may purchase either a print copy or an e-book copy of the textbook packaged together with access to MyMathLab (see below) from the UVic bookstore.

MyMathLab (MLM) This is a required tool developed by the publisher to support the textbook. You will use MLM to practice and to complete weekly assignments and quizzes. It also contains an e-text copy of the student solution manual. If you purchased the text bundled with access to MLM then you will also be given an MLM access code. If you did not purchase a new print copy, then you may purchase an access code directly from Pearson by logging into our course link and selecting the purchase option there. You may access MLM for a free 14-day trial if you are not yet ready to purchase it. As long as you purchase the access before the end of your trial period your work and grades will be preserved.

Course Pack/Handbook Over the years, previous instructors have developed an excellent Course Pack for Math 100 that presents the material in a brief manner, followed by examples and then concluding with some carefully chosen exercises to test understanding. This Course Pack will be available free of charge under a link on our Brightspace page.

Calculator A calculator will be needed in this course. The only calculators that may be used in **any** course offered by the department are made by Sharp, with model numbers starting EL-510R (a common example is EL-510RTB). One may be purchased at the UVic Bookstore or elsewhere for between \$14 - \$20. This calculator will be needed for Midterms I, II, and the Final exam. We strongly suggest using this calculator throughout the course. An invigilated test is a terrible place to realize you no longer have that '$\int dx$' button you have been using all term.

* WARNING* If you are found in a test with any other type of calculator, or if you have an approved calculator with crib notes on it, you will be removed from the test. If this happens in a final exam there will be a formal investigation, and if the facts are confirmed, you will be given an 'F' in the course, along with a letter of reprimand. You do not need to have used or even touched the calculator for these rules to be applied. If you have any doubt about your calculator, have one of the test invigilators approve it before you start the test.

Getting Help

Very few students are able to learn calculus from only the lectures and textbook. Sooner or later you will want to talk to someone about a challenging question you have encountered. The course has many resources to help you in this situation.

Asking questions in lectures Lecturers like it when students ask questions during lecture. Although lectures are huge, try not to be shy about asking questions by putting up your hand and waiting to be identified. Speak clearly when called. If the instructor is unable to hear your question they will usually ask you to repeat, or other students will step in to help out. Of course there is a limit to the number of questions that can be answered during lecture. If the instructor is unable to get to your question, approach them after class (again, a limited number of questions can be addressed after class) or bring your question to an office hour.

Help outside of class/office hours Posting a question to our **Brightspace Forum** is an excellent way to get a quick (usually reliable) answer to your question. Instructors will regularly monitor the forum and assist when required.

The **Mathematics & Statistics Assistance Centre (MSAC)** is a drop in service in the Elliott Building (ELL) where students can work on their own or in groups, and to discuss math & stats problems. The Centre is staffed with talented Teaching Assistants who are happy to discuss primarily first and second year course material with you. Please see `https://www.uvic.ca/science/math-statistics/current-students/undergraduate/msac/index.php` for more information. Talking with others, especially peers, about math is one of the best ways to gain a deeper understanding of the subject. We strongly encourage you to visit the MSAC at least once during this course.

Math Club Students in Undergraduate Mathematics and Statistics (SUMS) was founded in 2014 as the reincarnation of a previous undergraduate course union that had been inactive for a few years. Please see `http://www.uvic.ca/science/math-statistics/current-students/undergraduate/sums/index.php` for more information.

Women in Science WiS is a UVic-based peer to peer mentorship program aimed at all women students at UVic, but especially students in Science and Engineering. The program is looking for both peer mentor volunteers and students looking for a mentor. Visit this link if you want more information:
`https://www.uvicwomeninscience.com/peer-mentorship-program-1`

Chegg, Course Hero, Slader, ... The list is endless. Yes these sites can, in many cases, provide complete solutions to many of the problems we will ask you to solve in this course. University instructors have spent a lot of time on these sites in the last couple of years, us included. Our conclusion is that a) reading solutions to problems that you have not tried hard to solve yourself is not a helpful study tool. If it was, textbooks alone would be much more effective than they are (as reported by your student peers), b) many of the posted solutions are incorrect, or contain unnecessary steps or missing steps that can be confusing, and easy for us to spot, and, c) if you use such a service to solve problems that are submitted for grades, or even attempt to, that is academic misconduct of a very clear kind and you will be found out. The consequences are severe. Our best advice is to not bother with these services as they set you up for failure on invigilated tests, or worse, promote academic misconduct.

Evaluation and Grading – Details

Although this is a multi-section course, all of the homework, quizzes, tests and the exam will be developed by the instructors as a team and marking will be course-coordinated to ensure consistent standards across all sections.

Your final course percentage grade will be computed according to the following scheme.

Components	Dates	Weights
Assignments (MLM)	most weeks, due Sundays at 10:59pm	7%
30 minute quizzes (MLM)	most weeks, due Sundays 11:59pm	7%
Tutorial worksheets	most weeks, at end of tutorial	10%
GWT 1 (MLM)	TBA	2%
GWT 2 (MLM)	TBA	2%
GWT 3 (MLM)	TBA	2%
Midterm I	Sat, Oct 16, 9:00-10:30 am	15%
Midterm II	Sat, Nov 20, 9:00-10:30 am	15%
Final Exam	TBD	40%

A lettergrade will be assigned to your percentage grade according to the UVic standard table found here:
https://www.uvic.ca/calendar/undergrad/index.php#/policy/S1AAgoGuV?bc=true&bcCurrent=
14%20-%20Grading&bcGroup=Undergraduate%20Academic%20Regulations&bcItemType=policies

Return of Graded Work

MLM assignments, quizzes and tests will be system-graded and you will be able to see your grade, and in some cases, review your work. We will do our best to return hand-graded (submitted) work within 10 days of submission. If you believe that there is a mistake in grading on your paper, you must bring this to our attention **within 7 calendar days** of return of work. Do not bring us grading questions outside this 7-day window.

Missing Work

General If you miss any of the graded work in the above table, normally, you will not be allowed to make it up. **For most of you, this will be one of the biggest changes from high school.** In a limited number of circumstances, missed work may be accommodated. Specific policies in this course are as follows.

Missed Assignment, Quiz or Gateway Test These cannot be made up or excused. Your two lowest assignment and quiz grades will be dropped so the zero you get on a missed assignment, for example, will be one of the dropped grades. If you miss a Gateway test the remaining two Gateways will count 3% each. Do not ask for extensions in case of a missed assignment, quiz or Gateway test.

Missed Tutorial If you do not submit a tutorial exit ticket, you will get zero on the worksheet, whether you submit it or not. Your two lowest worksheet grades will be dropped and your 10% tutorial grade will be computed from those remaining.

Missed Midterm Academic concessions are only permitted in the case of documented illness, accident or family affliction. If you miss one midterm and we accept your documentation, its percentage will be transferred to your final examination (now worth 55%). If you do not present a valid reason for missing the test (example of

non-valid reasons: slept in, forgot, missed the bus . . .), you will get zero for the test. If you miss both midterms, you must contact your instructor immediately to discuss your (limited) options.

Missed Final Exam If you miss the Final for reasons other than illness, accident or family affliction (for example, you mis-read the exam schedule), you will get zero on the exam. Otherwise, you must go immediately to the records office and file a Request for Academic Concession (RAC) form[1]. You will be required to attach your documentation and the package will be forwarded from Records to your instructor. If approved, the RAC will result in an invitation to write a **deferred final exam** at a date of our choosing in early January.

COVID Policy on Illness For Fall 2021 only, due to ongoing COVID-19 mitigation, you will not be required to present a doctor's note for excused absence due to illness. In this case, write a short email to your instructor stating the facts and they will confirm that you have been approved for concession under illness as above.

WARNING Travel Plans The final examination date is not yet determined. Half-way through the term a preliminary Exam Schedule will be released ($\beta-$version). Shortly after, the final Exam Schedule will be posted. Once posted, dates will not be changed under any circumstances. **Do not make any travel plans or work commitments** until you have confirmed that they will not conflict with a posted Final Exam in one of your courses. The Department of Math and Stats forbids faculty from making arrangements for off-schedule Exams to accommodate student conflicts. Do not ask for exceptions!

Supplementals and 'E' grades The department of Math and Stats does not offer Supplemental Examinations or 'E' grades in its courses.

Ethics, Policies, Integrity and Well-being

General Policies Attending and/or working at a university is a privilege not a right. Your next four years are governed by rules that keep these principles in balance: academic integrity; adherence to principles of inclusivity and diversity; respect for students and respect for UVic staff and faculty. In all these areas there are basic standards of conduct that apply to both students and staff.

Mathematics and Statistics Policies See `https://www.uvic.ca/science/math-statistics/current-students/undergraduate/course-policies/index.php`. Read through this material and associated links if you read nothing else from this section. Please note that like all departments, we set high standards for student conduct and honesty, and, instructors are required to enforce these policies. Presented with evidence of cheating, instructors **must** exercise the departmental and university procedures and policy (see next section on Academic Integrity).

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[1]See the steps and rules in the link `http://web.uvic.ca/calendar/undergrad/info/regulations/concessions.html`

Academic Integrity In a nutshell, don't cheat. Something that sounds simple is actually a bit complicated when you dig into it. Read the University Policy on Academic Integrity by going here: `https://www.uvic.ca/calendar/undergrad/index.php#/home` then search on "academic integrity". By remaining enrolled in this course after September 15 , you agree that you have read the UVic policy linked above and will adhere to the rules. Pay particular attention to the 'three strikes and you're out' structure of the policy.

Talking About Math We encourage students to talk to other students about math problems in this course, including group work on problem sets. That is, up to the point where assignments are being prepared to hand in (in MLM, that means any time you are at the computer working on problems to be submitted for weekly homework or quizzes). Getting assistance on Assignments, Quizzes or Gateway Tests **while you are logged into MLM** is academic misconduct because you are misrepresenting work of others as your own. Please talk about math to whoever will listen! But do not copy solutions directly from others, or get someone else to select answers for you from MLM.

Tests The rules here are probably more familiar. Do not bring prohibited materials into tests. If you have any doubt, ask the invigilators at the test for clarification on individual items. One important difference you may not have encountered is that you **do not have to have used** prohibited materials to be guilty of misconduct. A set of crib notes upside down on the floor will get you removed from an exam. Formulas from High School algebra scratched onto your calculator will get you removed from an exam, as will bringing in the wrong calculator. Do not allow your gaze to wander onto your neighbour's exam paper. With up to 350 students in a room writing a test, we have to be very strict about this.

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.

First Peoples House The First Peoples House is a social, cultural and academic centre for Indigenous students at UVic and serves as a safe and welcoming place that encourages the building of community. More information can be found here `//www.uvic.ca/services/indigenous/house/index.php`.

Stress and Health Take care of yourself. Diminished mental health can interfere with optimal academic performance. Do your best to engage in self-care and maintain a healthy lifestyle this semester. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone. The source of symptoms might be related to your course work; if so, please speak to your instructor or tutorial instructor. However, problems with other parts of your life can also contribute to decreased academic performance. The **UVic Counselling Service** provides cost-free and confidential mental health services to help you manage

personal challenges that impact your emotional or academic well-being.

During the final exam period, UVic ramps up support and stress reduction events like 'Puppy Playtime'

`https://www.uvic.ca/alumni/home/home/news/archive/de-stress-fest.php`

The **Student Wellness Centre** (SWC) is made up of Counselling, Health and Multifaith servces. The SWC aims to provide holistic care to support UVic students? wellbeing emotionally, physically and spiritually. The SWC team includes counsellors, doctors, nurses, administrative staff, chaplains and other practitioners.

`https://www.uvic.ca/current-students/home/wellness-centre/`

Important dates for Math 100, Fall 2021

- Last day for withdrawing from the course with 100% fee reduction: Tuesday, September 21.

- Last day for adding courses (also switching courses/sections): Friday, September 24.

- National Day for Truth and Reconciliation: Thursday September 30 (University closed)

- Last day for withdrawing from the course with 50% fee reduction: Tuesday, October 12.

- Math 100 Midterm Test I: Saturday, October 16.

- Last day for withdrawing from the course without penalty of failure: Sunday, October 31.

- Reading Break, Fall 2021: Wednesday, November 10 – Friday, November 12.

- Math 100 Midterm Test II: Saturday, November 20.

- Last day of classes this term: Monday, December 6 (also Day of Remembrance and Action).

- Examination period: Thursday December 9 - Monday, December 20.