

University of Manitoba
Faculty of Science
Department of Mathematics

Sections: This syllabus is for section A01-A08 only

A01: MWF 10:30–11:20 am
Location: 100 Fletcher Argue
Instructor: *N. Harland*

A02: MWF 9:30–10:20 am
Location: 343 Drake
Instructor: *T. Kucera*

A03: MWF 2:30–3:20 pm
Location: 100 Fletcher Argue
Instructor: *D. Barr*

A04: MWF 12:30pm–1:20 pm
Location: 100 Fletcher Argue
Instructor: *L. Butler*

A05: TR 11:30am–12:45 pm
Location: 100 St. Paul's College
Instructor: *C. Bandyopadhyay*

A06: T 7:00–10:00 pm
Location: 204 Armes
Instructor: *C. Cowan*

A07: TR 10:00–11:15 am
Location: 206 Human Ecology
Instructor: *A. Shukla*

A08: MWF 8:30–9:20 am
Location: 221 Wallace
Instructor: *S. Cole*

1 Section-specific information: See separate handout provided by your instructor.

2 Required material

Textbook: *Calculus: Early Transcendentals*, 8th Edition, by James Stewart.

You need one of the following textbook bundles, each of which includes access to the “Enhanced Web Assign” system, which is required to complete the online optional assignments (not for credit):

ISBN: 0176824480 (Hard copy bundle option):

Custom textbook for MATH 1500, Enhanced WebAssign Access Card for Calculus with Multi-Term Courses.

ISBN: 9781285858258 (Digital-only bundle option):

Enhanced WebAssign to Accompany Calculus, Multi-Term Courses.

If you plan to go on to later courses using Stewart (Math 1700 and 2720) see the bookstore shelves for further appropriate purchasing options.

The bookstore also sells a “Course Pack” of prior Math 1500 Midterm and Final Exams, with solutions, to help students prepare for exams. This course pack is not required. It's up to you whether you purchase it!

The department of math also provides an archive online here: math.umanitoba.ca/courses/MATH1500 making old exams available to you at not cost—but these are without solutions and they are not recent.

3 Course Schedule & Outline

Important Dates and Deadlines

First day of classes:	Sept. 5	First day of labs:	Sept. 10
Last day to drop (w/ refund):	Sept. 18	Last day to add:	Sept. 19
Thanksgiving (no class):	Oct. 8	Remembrance Day (no class):	Nov. 12
Mid-Term Break (no class):	Nov. 13 – 16	Last day for voluntary withdrawal:	Nov. 19
Last day of classes:	Dec. 7	Final exam period:	Dec. 10–21

Topics to be covered, from Stewart's Calculus: Early Transcendentals, 8th Edition:

Section	Title	Suggested Homework (Odd-numbered questions)
1.1	Four Ways to Represent a function	1-15, 22-64, 69-70
1.3	New Functions from Old Functions	1-4, 30-48, 59
1.4	Exponential Functions	1-6, 11-16, 19-20
2.2	Limit of a Function	1-12, 15-18, 31-41
2.3	Limit Laws	1-32, 37-46, 49
2.5	Continuity	1-8, 11-31, 41-43, 51-56
2.6	Limits at Infinity: Horizontal Asymptotes	1-10, 15-40, 47-52, 60-64
2.7	Derivatives & Rates of Change	5-8, 12-15, 17, 31-44
2.8	The Derivative as a Function	1-11, 16-18, 21-31, 37-40, 49-52
Term Test 1: Oct. 9-15, 2018 in lab		
3.1	Derivatives of Polynomials & Exponential Functions	1-38, 49, 55-59, 64-67
3.2	Product & Quotient Rules	1-34, 41-48
3.3	Derivatives of Trigonometric Functions	1-24, 31-34, 39-52
3.4	The Chain Rule	1-54, 61-64, 77-79
3.5	Implicit Differentiation (omit inverse trig. functions)	1-32
3.9	Related Rates	1-35
1.5	Inverse Functions & Logarithms	1-18, 35-41, 49-58
3.6	Derivatives of Logarithmic Functions	1-34, 39-54
Term Test 2: Nov. 1-7, 2018 in lab		
4.1	Max & Min Values	1-44, 47-61
4.2	Mean Value Theorem	11-14, 21-33
4.3	How Derivatives Affect the Shape of a Graph	1-53
4.5	Curve Sketching (omit oblique asymptotes)	1-40, 42-52
Term Test 3: Nov. 26-30, 2018 in lab		
4.7	Optimization Problems	1-23, 25-41
4.9	Antiderivatives	1-18, 20-22, 25-43, 45-52, 59-65
5.1	Areas and Distances	1-5
5.2	Definite Integral	1-3, 33-42, 51
5.3	Fundamental Theorem of Calculus	1-44, 53-58, 59-69
5.4	Indefinite Integrals	1-35, 49-50

4 Evaluation and Grades

Item	Due Date(s)	Weight	Letter Grade	Minimum percentage to guarantee	Final Grade Point
Diagnostic test	See Section 6	5%			
Tutorial Worksheets	See Section 5	10%			
Term Tests (in lab)	Held in the following weeks:		A+	91	4.5
	Oct. 9-15	12%	A	83	4.0
	Nov. 1-7	each	B+	78	3.5
	Nov. 26-30		B	72	3.0
			C+	66	2.5
			C	60	2.0
			D	51	1.0
Final exam	(2 hrs) Date and time TBA	49%			

Student must score of at least 40% on the final exam to obtain a letter grade higher than D.

All topics taught in the course, **including proofs**, are testable.

No calculational aids of any kind (calculator, smartphone, abacus) are permitted on the worksheets, midterm nor final exam in this course.

Re-weighting of final grade or make-ups will not be considered for poor performance on any assessment.

5 Tutorials

You are required for and attend a tutorial section with this course that will be led by an experienced student mentor. In the tutorial you will be split into smaller groups, and will work individually or in groups on worksheets that will challenge you on the course content and warm you up for the term tests. You WILL be expected not only to attend, but to engage and participate fully. The best 6 out of 8 (or 5 out of 7 for Monday tutorials) are used to compute the 10% tutorial score; and each of them will be weighted equally.

6 Diagnostic Test Instructions:

Step 1: The First Pre-Calculus Diagnostic Test

- The first chance at the diagnostic test will occur in the first tutorial. Tutorials begin **Monday, September 10th**.
- If you obtain a grade of 70% or higher on the first diagnostic test, then you get the whole 5% of your diagnostic test grade and you are done. If you get less than 70% then go to step 2.
- If you do not take the first diagnostic test for any reason (for example you do not show up to the first tutorial or if you registered late for the course) then go to step 2.

Step 2: Remediation

- If your grade is less than 50% on the first diagnostic test or did not take the diagnostic test, you are required to complete the modules Exponents, Polynomials, Solving by Factoring, Rational Expressions, Functions, Logarithms and Trigonometry on LevelUp.
- If your grade is at least 50% but less than 70%, you are required to complete Functions, Logarithms and Trigonometry on LevelUp. However, it is strongly recommended that you complete the modules on topics for which you did not answer the questions correctly on the diagnostic test.

For information to how to access level-up, visit the following website:

<https://www.math.umanitoba.ca/undergrad-info/level-up/>

LEVEL-UP MUST BE COMPLETED BY SEPTEMBER 28TH OR YOU WILL NOT RECEIVE CREDIT FOR THE REMEDIATION. However it is strongly recommended that you complete the remediation as soon as possible. If you are repeating the course, you must re-do the remediation. Any work on Level-up completed before September 1st will not count. Go to step 3.

Step 3: The Second Diagnostic Test

- By September 28th, you are required to sign up for a second diagnostic test. The diagnostic test will be 50 minutes and there are many time slots during the week of October 1st–5th in **107 Machray Hall**.
- To sign-up for the second diagnostic, visit the Math office at 420 Machray Hall. You will sign up for a time and be given a slip to confirm that time. You must show up at that time with the slip or else you will not be guaranteed to be able to write.
- If you get at least 70% on the second diagnostic test, you get the full 5 marks on your final grade. Otherwise you get your percentage of the 5 marks. If you do not show up for the diagnostic test, you will receive a 0 unless supporting documentation is provided. In that case, you must discuss your situation with your instructor before your scheduled time.
- Students are strongly encouraged to sign up early to get a time-slot which matches their schedule. **WAITING UNTIL THE LAST MINUTE AND NOT HAVING AN IDEAL TIME-SLOT IS NOT AN EXCUSE FOR MISSING THE TEST.**

7 Attendance Policy

Attendance is mandatory at all classes and labs. Worksheets, written in lab, count for 10% of your grade.

8 Term Tests:

The term tests will be held in the labs during the weeks determined in Section 5. Students who miss writing a term test for valid medical or compassionate reasons will have their marks moved to the final exam. A student missing more than one term test should discuss their situation with their instructor. **You must contact your instructor no later than 48 hours after the test (but preferably earlier) if you require a deferral.**

You are required to take the test in the tutorial for which you are registered. Taking the test in another time slot will result in a score of 0.

9 Final examination:

The date, time, and location of a **2-hour-long** final examination will be set and published by the Registrar's Office. Students are reminded that they must remain available until all examination and test obligations have been fulfilled. The exam period is Dec. 10–21, 2018.

10 Expectations

Learning mathematics is a lot like building a house. A strong foundation is needed to produce a sturdy structure, while a weak foundation will quickly expose any structural deficiencies. In much the same way, a good grounding in high school mathematics is required for your study of MATH 1500 to be successful.

You cannot learn mathematics by cramming at the end of term. It is not that kind of subject; it involves ideas and computational methods which cannot be learned without practice. By way of analogy, how many athletes do you know who do well in contests by training for only a few days in advance?

These notes attempt to provide some hints about how to get the most out of the teaching system used for this course (lectures, labs and assignments), and other useful sources (Help Centre, marks). You should be aware of the following regulations about lectures and labs.

1. You must **take and also attend** one of the labs **associated with the lecture section in which you are registered**. Consult the Registration Guide for the times of these labs.
2. Remember there are marks associated with your lab work: worksheets must be written in the lab section in which you are registered.

Lectures: During lectures, professors present the course material to you. Because of the relatively large numbers of students in a lecture section and the necessity of presenting a certain amount of new material each day, lectures may seem rather formal. Almost certainly they will be quite different from your previous classroom experience.

No teaching system can be effective without work: Do not expect to learn mathematics simply by listening to lectures (or even taking notes). Here are a couple of ways to increase the effectiveness of the lecture system:

1. **Review** the lecture material as soon as possible, preferably the same day. Use the text during this review, and understand the material as completely as you can. Do as many textbook problems as you can; mathematics is a problem solving discipline. You cannot learn by watching other people solve problems—you have to solve them yourself.
2. **Refer to the course outline**, and try to read through the material before it is covered in lectures. When previewing like this it is not necessary to completely understand; familiarity with the general outline in advance of lectures will make them easier to follow.

Questions: Do not be troubled if you have questions, because everyone does. Some have less, some have more. In any case it is likely that if you have a question, others in class have the same question. Though you may have to take a deep breath to ask a question in class, this may also help your classmates.

Because of the relatively large number of students and the pace of the course, general discussion in lecture periods is limited. There will be more time available for questions in labs, but you may still find that you cannot get all your difficulties settled in lab time. Here are further ways to get answers.

1. **Study your textbook.** (This may seem pretty obvious, but people do not always think of it.)
2. **Talk the problem out with other students.** In this sort of exchange, both parties usually benefit. So, if someone asks you a question, do not brush them off as a waste your time. If you can solve their problem, you may well learn in the process. Even better, **form study groups** of 3-5 classmates with whom to study weekly.
3. **Go to your professor** during their office hours, or if that is not possible, email them to arrange another time or discuss your difficulty. You will find them quite willing to help.
4. **Go to the Mathematics Help Centre**, located in Room 412 Machray Hall, by yourself or collectively, with your study group. Its purpose is to provide a place where students can get answers to specific mathematical problems related to their course. You pay for this service via your course fees—so use it! The hours of operation will be posted on the door.

Do not expect anyone to re-teach large chunks of the course. It is **your responsibility** to keep up with course material.

11 Course Technology

It is University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Student Accessibility Services. Do not participate in personal direct electronic messaging/posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook)) online and offline “gaming” during scheduled class time. If you are on call (emergency) switch your cell phone to vibrate mode and leave the classroom to respond.

Your instructor will inform you if they plan a class webpage for your section besides UM Learn.

12 Recording Class Lectures

Your instructor and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission. Course materials (both paper and digital) are for the participant’s private study and research.

13 Student Accessibility Services

If you are a student with a disability, please contact SAS for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services <http://umanitoba.ca/student/saa/accessibility/>
520 University Centre
204 474 7423
Student.accessibility@umanitoba.ca

14 Academic Integrity

The Department of Mathematics, the Faculty of Science and the University of Manitoba all regard acts of academic dishonesty in quizzes, tests, examinations or assignments as serious offences and may assess a variety of penalties depending on the nature of the offence.

Acts of academic dishonesty include bringing unauthorized materials into a test or exam, copying from another student, plagiarism and examination personation. Students are advised to read section 7 (Academic Integrity) and section 4.2.8 (Examinations: Personations) in the General Academic Regulations and Requirements of the current Undergraduate Calendar. **Note, in particular, that cell phones and pagers are explicitly listed as unauthorized materials, and hence may not be present during tests or examinations.**

Penalties for violation include being assigned a grade of zero on a test or assignment, being assigned a grade of “F” in a course, compulsory withdrawal from a course or program, suspension from a course/program/faculty or even expulsion from the University. For specific details about the nature of penalties that may be assessed upon conviction of an act of academic dishonesty, students are referred to University Policy 1202 (Student Discipline Bylaw) and to the Department of Mathematics policy concerning minimum penalties for acts of academic dishonesty.

All students are advised to familiarize themselves with the **Student Discipline Bylaw**, which is printed in its entirety in the Student Guide; also available on-line or through the Office of the University Secretary. Minimum penalties assessed by the Department of Mathematics for acts of academic dishonesty are available on the Department of Mathematics web-page.

15 Notice Regarding Collection, Use, and Disclosure of Personal Information by the University

Your personal information is being collected under the authority of The University of Manitoba Act. It will be used for the purposes of grading papers and providing feedback to students. Personal information will not be used or disclosed for other purposes, unless permitted by The Freedom of Information and Protection of Privacy Act (FIPPA). The University of Manitoba has taken steps to ensure that its agreements with Crowdmark, Inc. and WebAssign for services provided by the Crowdmark and WebAssign applications are in compliance with FIPPA. Please be aware that information held by Crowdmark Inc. and Webassign may be transmitted to and stored on servers outside of the University of Manitoba, or Canada. The University of Manitoba cannot and does not guarantee protection against the possible disclosure of your data including, without limitation, against possible secret disclosures of data to a foreign authority in accordance with the laws of another jurisdiction. If you have any questions about the collection of personal information, contact the Access and Privacy Office (tel. 204-474-9462), The University of Manitoba, 233 Elizabeth Dafoe Library, Winnipeg, Manitoba, Canada, R3T 2N2.

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