MAT 1320 A : Calculus I
Fall 2016

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Website: `http://mysite.science.uottawa.ca/mnevins/MAT1320/`. (Note: the website is very important to the course – students are expected to be aware of all material and announcements posted there.) Your grades will appear in the Blackboard GradeBook for this course.

Office Hours: To be determined. (See website and Doodle poll.)

Text: *Calculus: Early Transcendentals* by James Stewart, 8th Edition. The 7th Ed. is also fine.

Lectures: Mondays 10:00 - 11:30 and Wednesdays 8:30 - 10:00 in MNT202. Prepare for class by reviewing the material of the previous class and reading the text. The section numbers corresponding to each lecture are given on the website.

DGDs: These are discussion groups on Fridays, led by a graduate student TA. **Attendance is mandatory. The first DGD is Friday, September 16th.** You will have registered for one of several equivalent DGDs:

1. 8:30–10:00 in FTX 147B
2. 10:00–11:30 in SCS C2111
3. 11:30–13:00 in FTX 147A
4. 13:00–14:30 in MCD 121 until Nov 4, where it becomes MRN 021.
5. 14:30 - 16:00 in LPR 285

In DGDs, you work through suggested exercises as a group, as well as go over solutions to assignments. Prepare for the DGD by attempting all exercises from the previous week. You should then ask the TA to go over the problems you found difficult. There will also be brief **quizzes** given in the DGDs using *Lecture Tools* (more information will be posted on the website).

The list of exercises from the textbook, together with the assignment problems, provide the required practice for the midterm tests and the final exam, which will consist of similar problems.

Course description: Intuitive definition of limits; continuity, statement of intermediate value theorem. Quick review of basic derivative formulas: products, chain rule, exponentials, and trigonometric functions. Derivatives of quotients, logarithms, inverse trigonometric functions. Finite difference approximations of derivatives. Analysis of functions via the first and the second derivatives; statements of extreme and mean value theorems. L'Hospital's rule. Implicit differentiation, related rates, optimization, linear approximation, Newton's method. The definite integral and the fundamental theorem of calculus. Antiderivatives of elementary functions, techniques of integration (integration by parts, substitutions, partial fractions). Numerical integration: mid-point, trapezoidal rule and Simpson's rule; error analysis.

Prerequisite: One of MAT1339, Ontario 4U Calculus and Vectors (MCV4U) or an equivalent. The courses MAT1320, MAT1300, MAT1308, MAT1330 cannot be combined for credit.

Evaluation : MAT1320A

Midterm Tests: There are two 80 minute midterm tests, written during the lecture period:

Test 1: Week 5: Wednesday October 5th. Covers up to the end of week 4.

Test 2: Week 10: Wednesday November 16th. Covers weeks 5 to 9 inclusively.

Final Examination: The 3-hour final exam will be scheduled during the exam period (December 9th - 22nd). It will cover all of the material of this course.

Calculators: Students will **NOT** be allowed to use calculators on the Quizzes, Tests or Final Exam.

Calculation of the final grade: Assignments 15%, DGD Quizzes 5%, Midterm Tests $2 \times 15\%$, Final Exam 50%. Exceptions: One assignment mark will be dropped (lowest or missing grade) in the calculation of your final grade. You must write at least one midterm test and most of the DGD quizzes to earn a passing grade. If your final exam mark is below 40%, then your final grade will be **F** regardless of other marks.

Midterm Test Procedures:

- If a midterm is missed for a valid reason, its percentage weight will be transferred to the final exam provided you notify your professor by e-mail *before* the test is written and submit a proper justification (e.g. certificate from UO Health Services) when you return to class. Otherwise the grade assigned is 0.

- 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 attempt at copying is treated as a case of academic fraud, as is the facilitation of copying by others. Students must take reasonable care to prevent others from copying their work.

- Any questions concerning marks or the marking must be submitted to the professor within two weeks after the test.

Electronic Assignments will be completed using a web-based software called Maple TA. You will be need to purchase a licence to access this software, which will be used in both MAT1320 and MAT1322, and is valid for one year.

- To purchase your access, go to (link on our website)
  `https://webstore.maplesoft.com/?purchasetype=student&promocode=UOTTAWA2016FA&location=Canada`. Your username should be *your 7-digit student number*.

- Questions? See the FAQ and extra instructions at (link on our website)
  `http://aix1.uottawa.ca/~bdionne/teaching/MapleTA_en.html`.

- Once you have access, you will log on to the uOttawa Maple TA website at
  `http://place32.placementtester.com:8080/uottawa/login/login.do` .

- The first assignment is "How does Maple TA work?". Please log in and complete this assignment to familiarize yourself with the system.

- Please note that server access will be slower during peak times (such as a few hours before the deadline) – **plan ahead and avoid frustration.**

Need Help ?

In addition to your weekly DGD, the Lectures, and the Professor's Office Hours, you can get help at the
Mathematics Help Centre
`http://www.mathstat.uottawa.ca/ugrad/help_center_en.html`.

This year, the Help Centre is located in TBT C115, due to construction on campus. It is open Monday–Wednesday 10:00–19:00, Thursday 10:00–17:00 and Friday 10:00–15:00, except during the study break and during the final exam period, when special hours apply. See the help centre website for details.

The staff at the Help Centre and the TAs in the DGDs will be pleased to help you solve the practice problems or other problems from the text, but *not problems for the next assignment*. If you have difficulties with an assigned problem, ask for help with a similar problem from the text instead. If you have difficulties with the material presented in the lectures rather than with particular problems, see your professor during office hours or make an appointment.

Suggestions for students, from the coordinator of the help centre, on how to make the use of the Help Center more efficient:

- If you are seeking help with an assignment question, don't expect a full solution from staff. In this case a staff member can only clarify some aspects of the question in order to put the student in the right direction.

- Don't wait until the day before a test/midterm to come and ask your questions. Those days will be usually very busy. Study regularly and make some weekly hours availabe in your schedule during which you come and ask your questions.

- Normally, there is no time limit for asking questions, and they staff the Centre to meet demand. But when it gets busy (and it will before tests), the Centre can be too busy, and then they limit the time to 10 minutes/student, at the end of which, the student can rewrite his/her name at the bottom of the list.

- Come with specific questions, and bring your rough work if possible. If you need a re-explanation of a section of the book, go to office hours instead, as the time for your questions is limited in the centre (when it is busy).

- Work in groups on the suggested problems and to come in groups to the help center to ask a common question, which can be answered to your group.

- The role of the consultants in the Help room is not to give a "solution" or an "answer" to a specific problem, but to teach you to solve the next one on your own. They will engage you in a discussion about the problem; for example, you will be expected to explain the method you tried.

- The Help Center is a study place. Refrain from disturbing fellow students who are trying to concentrate.

- A visit to the Help Centre is a success if you can do similar problems to the one you came for help with, on your own.

A note on academic fraud

- Academic fraud is a serious offense. It is defined in Academic Regulation 14 of the University of Ottawa, available at
  https://www.uottawa.ca/administration-and-governance/
  academic-regulation-14-other-important-information
  and the sanctions imposed are severe.

- You are encouraged to work in groups on assignments and while studying. The key point is: **write the solutions on your own.** Put aside the notes and calculations you made as a group, and find out what remains in your own head. This is both good learning and honest learning.

- Final exams are managed strictly by the Faculty of Science; rescheduling or postponing exams is not possible unless you are ill (in which case there are strict rules regarding medical certificates; see the Faculty of Science for details).

- For midterm and final exams: Cellular phones, unauthorized electronic devices or course notes (unless an open-book exam) are not allowed during exams. Phones and devices 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.

Extra help

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. To obtain accommodations for your courses, or for a variety of programs and forms of assistance, please contact the *Student Academic Success Service* (SASS) at https://sass.uottawa.ca/en.

Some sessional dates to know

Sept. 7	Classes Begin
Oct. 10	Thanksgiving Day (no classes)
Oct. 24–28	Study Break (no classes)
Nov. 18	Last day for withdrawal. If the course is not working out for you, this is the last date to drop the course and thereby avoid any mark appearing on your transcript. Students in difficulty should discuss this with the professor or their academic advisor.
Dec. 7	Classes End (Monday schedule)
Dec. 9–22	Examination Period. The final exam schedule will be available in October; do not make travel plans until you know your schedule.

More important dates and deadlines available at:
https://www.uottawa.ca/important-academic-dates-and-deadlines/

Suggested Exercises:

These are from the 8th edition of the textbook, and are also listed on the website. You are expected to try the exercises relating to each lecture after class; some will be taken up in detail in the DGD. Do your MapleTA homework **after** you have achieved proficiency with these exercises.

§1.1 p19 # 1, 3, 7, 9, 13, 15, 23, 25, 31, 33, 35, 37, 45, 47, 49

§1.2 p33 # 1, 3, 9, 15

App D pA32 # 1, 3, 7, 11, 23, 27, 29, 31, 49, 51, 65, 69

§1.3 p42 # 3, 29, 31, 33, 35, 41, 43, 45, 51, 57

§1.4 p53 # 1, 3, 17, 19, 21, 23

§1.5 p66 # 1, 3, 7, 11, 15, 17, 21, 23, 25, 29, 33, 35, 37, 39, 41, 51, 53, 63, 65, 67, 69, 71

§2.1 p82 # 3, 5

§2.2 p92 # 5, 7, 11, 23, 31, 33, 41

§2.3 p102 # 1, 11, 13, 19, 21, 23, 25, 27, 31, 41

§2.5 p124 # 17, 19, 21, 35, 37, 39, 45

§2.6 p137 # 3, 7, 9, 15, 17, 19, 23, 25, 29, 31, 33, 41, 43, 49

§2.7 p148 # 5, 7, 13, 15, 23, 27, 29, 31, 33, 35, 37, 39, 41, 43

§2.8 p160 # 3, 13, 21, 23, 25, 27, 29, 31, 37, 39, 41, 43, 47, 49, 51

§3.1 p180 # 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 45, 47, 49, 51, 53, 55, 57, 63, 65

§3.2 p188 # 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 41, 43, 45, 47, 51, 53, 55, 59, 61, 63

§3.3 p196 # 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 29, 31, 33, 35, 37, 51, 53

§3.4 p204 # 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 51, 53, 59, 61, 63, 69, 71, 75, 79

§3.5 p215 # 5, 7, 9, 11, 13, 15, 17, 19, 25, 27, 29, 31, 37, 43, 49, 51, 53, 55, 57, 59, 71, 75, 77

§3.6 p223 # 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 31, 33, 37, 39, 41, 43, 45, 47, 49, 51

§3.9 p249 # 1, 3, 5, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41

§3.10 p256 # 1, 3, 5, 7, 9, 23, 25, 31

§4.1 p283 # 3, 5, 9, 11, 29, 31, 33, 35, 37, 39, 41, 43, 47, 49, 51, 53, 55, 57, 59, 61, 69

§4.2 p291 # 1, 5, 7, 9, 11, 19

§4.3 p300 # 1, 5, 7, 9, 11, 13, 15, 17, 19, 21, 25, 27, 33, 35, 37, 39, 41, 43, 45, 49, 67

§4.4 p311 # 7, 9, 11, 13, 15, 19, 23, 25, 27, 33, 39, 41, 45, 47, 49, 51, 55, 57, 61

§4.5 p321 # 1, 3, 9, 13, 15, 19, 37, 39, 41, 43, 45, 51

§4.7 p336 # 7, 9, 13, 15, 19, 21, 25, 33, 35, 37, 43, 49

§4.8 p348 # 7, 11, 13, 15

§4.9 p355 # 3, 7, 11, 15, 17, 25, 27, 29, 33, 35, 37, 39, 41, 45, 47, 51, 59, 61, 63, 65

§5.1 p375 # 3, 5, 13, 15

§5.2 p388 # 5, 7, 11, 17, 19, 21, 25, 33, 35, 37, 39, 43, 49

§5.3 p399 # 3, 5, 7, 11, 13, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 41, 43, 59, 61, 63

§5.4 p408 # 1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 23, 27, 29, 31, 33, 37, 39, 41, 43, 45, 53, 57, 59, 61, 63

§5.5 p418 # 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 39, 41, 43, 45, 47, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 79

§7.1 p476 # 1, 3, 5, 7, 9, 11, 13, 15, 17, 23, 27, 33, 37, 39, 41, 51, 53

§7.2 p484 # 1, 3, 7, 11, 19, 21, 23, 27, 29, 41, 43, 47

§7.3 p491 # 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 25, 27

§7.4 p501 # 7, 9, 11, 15, 19, 21, 23, 27, 29, 39, 41, 43, 47

§7.5 p507 # 1 – 81 (do as many of the odd-numbered questions as you can (but not # 53))

§7.7 p524 # 1, 5, 7, 9, 15, 35

Weekly Schedule:

This schedule is also available on the website. Section numbers refer to the 8th edition of the textbook.

Week 1

Wed. Sept. 7 §1.1, 1.2, 1.3

Week 2

Mon. Sept. 12 §1.4, 1.5, App D

Wed. Sept. 14 §2.1, 2.2, 2.3

Week 3

Mon. Sept. 19 §2.5, 2.6

Wed. Sept. 21 §2.7, 2.8

Week 4

Mon. Sept. 26 §3.1, 3.2

Wed. Sept. 28 §3.3, 3.4

Week 5

Mon. Oct. 3 §3.5, 3.6

Wed. Oct. 5 **Test 1**. Covers §1.1 - 3.4

Week 6

Wed. Oct. 12 §3.9, 3.10

Week 7

Mon. Oct. 17 §4.9

Wed. Oct. 19 §5.1, 5.2

Week 8

Mon. Oct. 31 §5.3, 5.4

Wed. Nov. 2 §5.5

Week 9

Mon. Nov. 7 §7.1, 7.2

Wed. Nov. 9 §7.2, 7.3

Week 10

Mon. Nov. 14 §7.4, 7.5

Wed. Nov. 16 **Test 2**. Covers §3.5 - 7.3

Week 11

Mon. Nov. 21 §7.7

Wed. Nov. 23 §4.1, 4.2

Week 12

Mon. Nov. 28 §4.3, 4.4

Wed. Nov. 30 §4.5

Week 13

Mon. Dec. 5 §4.7, 4.8

Wed. Dec. 7 Review