

## Course Outline for ARTSSCI 1D06 / Calculus

2020-2021 (Fall 2020 and Winter 2021)

**Instructor:** Dr. Megumi Harada, [megumi.harada@math.mcmaster.ca](mailto:megumi.harada@math.mcmaster.ca)

### **Instructor Office Hours:**

- Fall Term 2020: Thursdays 9:30—10:20AM (on MS Teams or Zoom)
- Winter Term 2021: Fridays 9:30—10:20AM (on MS Teams or Zoom)

### **Class Times:**

- Fall Term 2020: Tuesdays and Thursdays 2:30—3:20PM (on MS Teams or Zoom)
- Winter Term 2021: Thursdays and Fridays 2:30—3:20PM (on MS Teams or Zoom)

### **Teaching assistants:**

- Adrian Cook, [cookal1@mcmaster.ca](mailto:cookal1@mcmaster.ca)
- Andrew Dissanayake, [dissanaa@mcmaster.ca](mailto:dissanaa@mcmaster.ca)
- Ryan Edwards, [edwarr4@mcmaster.ca](mailto:edwarr4@mcmaster.ca)

**Tutorials:** There are 3 tutorials, each led by one of the TAs:

### **Fall**

Thurs. 10:30-11:20AM- Andrew Dissanayake

Thurs. 11:30-12:20PM- Adrian Cook

Thurs. 12:30-1:20PM- Ryan Edwards

### **Winter**

Mon. 9:30-10:20AM- Adrian Cook

Mon. 10:30-11:20AM- Andrew Dissanayake

Mon. 11:30-12:20PM- Ryan Edwards

**Textbook:** Calculus: early transcendentals, 9th edition, by James Stewart, Nelson Education Ltd. *You must also purchase a license for WebAssign (Nelson's on-line resources for the textbook)*, since there will be on-line homework assignments using WebAssign.

**Course description and objectives:** This course will be a full-year treatment of single-variable differential and integral calculus at a university level. There are two main objectives of the course. The first is to learn the techniques and applications of the differential and integral calculus. The second is to develop writing and oral communication skills, especially for technical and/or mathematical ideas.

**Course structure and delivery structure:** For the 2020-2021 year, this course will be delivered as a *virtual, on-line* course.

NOTE: The exact format and platforms used for the virtual course is subject to change, depending on the success of the initial format/platforms used. If it is to the advantage to the students to make changes, we will do so.

For 2020-2021, the course content will be delivered in a *blended* format; all content will be available in asynchronous format, but synchronous, “live” sessions will be offered as supplemental support. The main course portal will be Avenue to Learn (a.k.a. Avenue), with MS Teams playing a supporting role for live sessions.

- Pre-recorded mini-lectures covering course content (on Avenue to Learn);
- Posted lecture notes accompanying each mini-lecture (on Avenue);
- Two scheduled “live” session per week with the instructor, which is intended for problem-solving and question-and-answer/discussion. (Optional; conducted on MS Teams by default, with Zoom the emergency alternative if MS Teams doesn’t work)
- One scheduled “live” session per week with a pre-assigned Teaching Assistant, intended for informal questions-and-answer/discussion as well as homework help and other advice. (Optional; conducted on MS Teams by default, with Zoom the emergency alternative if MS Teams doesn’t work)
- Office hours: one scheduled “live” office hour per week with the instructor, and three scheduled “live” office hours per week with each of the 3 TAs, which is intended for one-on-one question-and-answer. (Optional; conducted on MS Teams by default, with Zoom the emergency alternative if MS Teams doesn’t work)

All “live” sessions are optional, in recognition of the fact that some students may find it difficult to participate for a number of reasons.

However, if students do opt to attend the weekly live sessions with the instructor, they will be expected to view the pre-recorded mini-lectures prior to attending the session, because the mini-lectures will (often) contain problems which students are asked to think about in advance before participating in the live sessions. Time permitting, we will address student-initiated questions during the live sessions as well.

Pre-recorded videos for the entire week will be posted by Monday morning. For Fall 2020, the instructor’s “live” session will take place Tuesdays and Thursdays 2:30–3:20PM, unless otherwise announced. To participate in the Tuesday session with the instructor, students will be expected to have viewed the first half of that week’s videos. For the Thursday live session, the students will be expected to have viewed the second half. For Winter 2021, the instructor’s “live” sessions will take place Thursdays and Fridays 2:30—3:20PM, unless otherwise announced.

The live tutorial sessions with the Teaching Assistants will take place on Thursdays during the Fall term and on Mondays during the Winter term, as indicated above. Each student will have been assigned to a TA, and is expected to attend the live session for his/her TA. These sessions are intended for informal question-and-answers, as well as for (more) direct help and support on the homework assignments.

Before COVID-19 changed our plans, this course had 3 scheduled lecture hours and 1 tutorial hour with the instructor per week, plus an additional 1 hour of tutorial with a Teaching Assistant, for a total of 5 contact hours. In recognition of this original format, the virtual

course will also deliver content of two types: firstly, the core course material from the Stewart textbook, and second, supplementary/supporting material as appropriate (e.g. review of material from high school, mathematical logic, mathematical writing, scientific communication, frontiers of mathematical research, et cetera). *The ratio of material presented over the Fall term will be roughly 75% core + 25% supplementary.* For much of the Fall term, the supplementary material will focus on high school review, mathematical logic/writing, and scientific communication.

**Assessment:**

Late submission of any assignments or other assessments will not be accepted.

Grading Scheme for **Fall 2020 Term portion** of course mark: *computed to be the MAXIMUM (i.e. the BETTER of) the following two grading schemes:*

*Scheme 1:*

- 5% Scientific Communication essay (due Monday 7 December at 11:59PM)
- 22.5% WebAssign homeworks (due weekly on Thursdays at 11:59PM, best 8 out of 10)
- 22.5% Long-answer homeworks (due weekly on Sundays at 11:59PM, best 8 out of 10)
- 25% Take-home test #1 (Friday October 23 2020, 12:00AM to 11:59PM)
- 25% Mid-Year Examination (to be scheduled by the Office of the Registrar during the December Examination Period)

*Scheme 2:*

- 5% Scientific Communication essay (due Monday 7 December at 11:59PM)
- 5% Participation in Discussion Forums
- 20% WebAssign homeworks (due weekly on Thursdays at 11:59PM, best 8 out of 10)
- 20% Long-answer homeworks (due weekly on Sundays at 11:59PM, best 8 out of 10)
- 25% Take-home test #1 (Friday October 23 2020, 12:00AM to 11:59PM)
- 25% Mid-Year Examination (to be scheduled by the Office of the Registrar during the December Examination Period)

Participation in Discussion Forums: To earn participation marks as indicated in the Grading Scheme 2 above, students are expected to post, on a **bi-weekly basis**:

- at least *two* posts of mathematical substance.

(You will not earn extra marks for any posts in addition to the two above, but you are of course encouraged to make use of the Discussion Forum as much as you like!) For the Fall 2020 term, the cutoff for earning marks is **Sunday at 11:59PM (on a biweekly basis)**. For the Winter 2021 term, the cutoff will be **Monday at 11:59PM (on a biweekly basis)**. Each bi-weekly unit is worth 1% of your participation mark. Since there are 12 weeks in the term, the bi-weekly contributions will be counted  $12/2 = 6$  times. This means *you can miss one bi-*

*weekly unit without penalty.*

What "... of mathematical substance" exactly means, is a valid subject for debate. However, a reasonable rule of thumb is that "How do you solve Question X on page Y?" is not going to make the cut. Roughly speaking, the post should exhibit some *serious effort and thought process on your part*. A substantive post would be more like this: "I tried doing Problem 2(a) on page ..., and I tried the following method [attach a snapshot of your work up to a certain point] but I am stuck here because [insert reason] even though I tried [strategy A] and [strategy B]. Any thoughts?"

The Discussion Forum will be monitored for inappropriate content or style, as well as any lingering questions that require the instructor's input.

Scientific Communication essay: You will be asked to write an essay each term pertaining to Scientific Communication skills. You will be asked to work in groups of 2 to 4 students, with one essay submission per group. (If you strongly prefer to work alone, you may do so, but it will be much less fun, and probably more work.) More details will be discussed near the beginning of each term, but roughly for the Fall term: you will be asked to form your groups by late September. You will submit a topic and brief plan for your essay for review, by late October. The final essay (~3-5 pages) for the Fall term will be due **Monday, 7 December 2020**.

The final essay (~3-5 pages) for the Winter term will be due **Wednesday, 14 April 2021**.

*(Late essays will not be accepted, in either term.)*

WebAssign Homeworks: These are mainly computational questions that check that you have a basic working understanding of the material. These homeworks will be assigned on a weekly basis and will be due on **Thursdays at 11:59PM for the Fall term and Fridays at 11:59PM for the Winter term**. They will be completed and submitted on the WebAssign online platform provided by the textbook publisher. They are automatically marked, so you will receive feedback on your work immediately. You will be given multiple attempts on each question. The questions will be randomized, so everyone will get (slightly) different questions, but you are still encouraged to discuss the problems with each other and collaborate, within the bounds of McMaster's Academic Integrity rules. (More on that below.) I will take the best 8 out of 10 of your scores.

Long-Answer Homeworks: These assignments will build upon the foundational knowledge gained from doing the computational WebAssign homeworks. The long-answer homeworks will consist of more conceptual questions that require a deeper understanding of the ideas being presented in the course. The answers to these questions will not be a "Yes/No" or "True/False", nor will the answers be a number like "2.12" or a single equation like " $y=2x$ ". Instead, the answers to these homework questions will usually consist of several complete English sentences/paragraphs that explain a thought process, or a sequence of logical/mathematical reasoning, that are more similar to an *essay* than to the kind of math problems you are likely to have encountered in high school. Please don't freak out; your instructor and your TAs will provide a lot of guidance to aid you. As for the WebAssign homeworks, you are also encouraged

to work collaboratively on these homeworks and get help, within the bounds of McMaster's Academic Integrity rules. The simple rule is: no matter how much you discuss with others in advance, the final submitted work must be **your own work, in your own words**'. These assignments will be submitted for marking by your TAs through the Crowdmark online platform, and are due on **Sundays at 11:59PM for the Fall term and Mondays 11:59PM for the Winter term**. I will take the best 8 out of 10 of your scores, each term.

Take-Home Tests: There will be two take-home tests. These will be open-book, open-notes, and you are permitted and encouraged to discuss the problems with your classmates. However, as with homeworks, the final submission must be *your own work, in your own words*. More details concerning Academic integrity issues for the take-home will be discussed. Each take-home test will be available for 24 hours. The tests are scheduled to take place:

- Friday October 23 2020, 12:00AM to 11:59PM
- Tuesday March 2, 2021, 12:00AM to 11:59PM

Grading Scheme for **Winter 2021 Term portion** of course mark: *computed to be the MAXIMUM (i.e. the BETTER of) the following two grading schemes*:

*Scheme 1:*

- 5% Scientific Communication essay (due Wednesday April 14, at 11:59PM)
- 22.5% WebAssign homeworks (due weekly on Fridays at 11:59PM, best 8 out of 10)
- 22.5% Long-answer homeworks (due weekly on Mondays at 11:59PM, best 8 out of 10)
- 25% Take-home test #1 (Tuesday March 2, 2021, 12:00AM to 11:59PM)
- 25% Final Examination (to be scheduled by the Office of the Registrar during the April Examination Period)

*Scheme 2:*

- 5% Scientific Communication essay (due Wednesday April 14 at 11:59PM)
- 5% Participation in Discussion Forums. (Best 5 out of 6) Biweekly deadlines for completion as follows.
  - Monday January 25 at 11:59PM
  - Monday February 8 at 11:59PM
  - Monday March 1 at 11:59PM
  - Monday March 15 at 11:59PM
  - Monday March 29 at 11:59PM
  - Monday April 12 at 11:59PM
- 20% WebAssign homeworks (due weekly on Fridays at 11:59PM, best 8 out of 10)
- 20% Long-answer homeworks (due weekly on Mondays at 11:59PM, best 8 out of 10)
- 25% Take-home test #1 (Tuesday March 2, 2021, 12:00AM to 11:59PM)
- 25% Final Examination (to be scheduled by the Office of the Registrar during the April Examination Period)

## **Weekly Flow of the Course**

### Fall Term:

- Mondays: all mini-videos of course content, the WebAssign homework, and the long-answer homework for that week will be posted, accompanied by a Weekly Guide to the material. Students are expected to begin viewing the lecture videos, read relevant sections of the text, and try the practice problems suggested in the Weekly Guide.
- Tuesdays: the first ``live'' session with the instructor, with discussion/problems covering the first half of the mini-lectures of the week.
- Thursdays: the second ``live'' session with the instructor, with discussion/problems covering the second half of the mini-lectures of the week. Instructor office hours, for one-on-one help.
- Thursdays: ``live'' tutorial sessions with the Teaching Assistants. WebAssign homework due at 11:59PM.
- Friday to Sunday: Long-answer homework due on Sunday at 11:59PM, and the Discussion Forum posts due biweekly on Sunday at 11:59PM. Prepare for a fresh start of the new week on Monday morning.

### Winter Term:

- Tuesdays: all mini-videos of course content, the WebAssign homework, and the long-answer homework for that week will be posted, accompanied by a Weekly Guide to the material. (Content will be posted sooner if possible.) Students are expected to begin viewing the lecture videos, read relevant sections of the text, and try the practice problems suggested in the Weekly Guide.
- Thursdays: the first ``live'' session with the instructor, with discussion/problems covering the (roughly) first half of the mini-lectures of the week.
- Fridays: instructor office hours, and the second ``live'' session with the instructor, with discussion/problems covering the (roughly) second half of the mini-lectures of the week.
- Fridays: WebAssign homework due at 11:59PM.
- Mondays: ``live'' tutorial sessions with the Teaching Assistants.
- Mondays: Long-answer homework due at 11:59PM, and the Discussion Forum posts due biweekly on Mondays at 11:59PM.
- TA office hours held on a weekly basis.
- 1D06 Help Centre held on a weekly basis.

## **Schedule of Readings and Lectures (Tentative and Subject to Change)**

Sept 8-11 : Stewart Chapter 2

Sept 14-18: Stewart Chapter 2

Sept 21-25: Stewart Chapter 2

Sept 28-Oct 2: Stewart Chapter 3

Oct 5-9: Stewart Chapters 3 and 4

Oct 12-16: Midterm Recess

Oct 19-23: Stewart Chapter 4

Oct 26-30: Stewart Chapters 4 and 5

Nov 2-6: Stewart Chapter 5

Nov 9-13: Stewart Chapter 5

Nov 16-20: Stewart Chapter 6

Nov 23-27: Stewart Chapter 9

Nov 30-Dec 4: Stewart Chapter 9

Dec 7-9 : Stewart Chapter 9

Jan 11-15: Stewart Chapter 7

Jan 18-22: Stewart Chapter 7

Jan 25-29: Stewart Chapter 8

Feb 1-5: Stewart Chapter 10

Feb 8-12: Stewart Chapter 10 and Chapter 11

Feb 15-19: Midterm Recess

Feb 22-26: Stewart Chapter 11

March 1-5: Stewart Chapter 11

March 8-12: Stewart Chapter 14

March 15-19: Stewart Chapter 14

March 22-26: Stewart Chapter 14

March 29-April 2: Additional Topics TBD

April 5-9: Review, or, Additional Topics TBD

April 12-14: Review, or, Additional Topics TBD

## SENATE-APPROVED ADVISORY STATEMENTS

### ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>.

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

### AUTHENTICITY / PLAGIARISM DETECTION

**Some courses may** use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software. **All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., online search, other software, etc.). For more details about McMaster’s use of Turnitin.com please go to [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity).

### COURSES WITH AN ONLINE ELEMENT

**Some courses may** use online elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses online elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.



## **ONLINE PROCTORING**

**Some courses may** use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

## **CONDUCT EXPECTATIONS**

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the [Code of Student Rights & Responsibilities](#) (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online.**

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

## **ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES**

Students with disabilities who require academic accommodation must contact [Student Accessibility Services](#) (SAS) at 905-525-9140 ext. 28652 or [sas@mcmaster.ca](mailto:sas@mcmaster.ca) to make arrangements with a Program Coordinator. For further information, consult McMaster University’s [Academic Accommodation of Students with Disabilities](#) policy.

## **REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK**

McMaster Student Absence Form (MSAF): In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “Requests for Relief for Missed Academic Term Work”.

## **ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)**

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to their Faculty Office **normally within 10 working days** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

## **COPYRIGHT AND RECORDING**

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and

copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

### **EXTREME CIRCUMSTANCES**

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

### **NOTES FOR ALL ARTS & SCIENCE COURSES**

1. Some of the statements above refer to a “Faculty Office”; please note that the Arts & Science Program Office serves in this capacity.
2. It is the responsibility of students to check their McMaster email regularly. Announcements will be made in class, via A2L, and/or via the course email distribution list <d-as1D06@mcmaster.ca>.