# DEPARTMENT OF MATHEMATICAL AND COMPUTATIONAL SCIENCES
# UNIVERSITY OF TORONTO MISSISSAUGA

## MAT135H5F LEC0101
## Differential Calculus
## Course Outline - Fall 2019

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| **Class Location & Time** | |
| **Instructor** | Maria Wesslen(coord.+LEC7) |
| **Office Location** | DH3048 |
| **Office Hours** | Tuesdays 3-4 and Fridays 1-3 |
| **Telephone** | 905-828 5323 |
| **E-mail Address** | maria.wesslen@utoronto.ca |
| **Course Web Site** | https://q.utoronto.ca |
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| **Co-Instructor** | Nadya Askaripour (LEC0113) |
| **Office Location** | DH3097A |
| **Office Hours** | Wednesdays 1:30 - 2:30 and Fridays 10 -11 |
| **E-mail Address** | nadya.askaripour@utoronto.ca |
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| **Co-Instructor** | Andie Burazin (LEC0103) |
| **Office Location** | DH3058 |
| **Office Hours** | Mondays 10-12 |
| **E-mail Address** | a.burazin@utoronto.ca |
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| **Co-Instructor** | Adina Gamse (LEC0102+4) |
| **Office Location** | DH3060 |
| **Office Hours** | Mondays and Thursdays 17:15 -18:45 |
| **E-mail Address** | adina.gamse@utoronto.ca |
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| **Co-Instructor** | Yuri Kudriashev (LEC0106) |
| **Office Location** | TBA |
| **Office Hours** | TBA |
| **E-mail Address** | TBA |
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| **Co-Instructor** | Hossein Lamei Ramand (LEC5) |
| **Office Location** | DH3097B |
| **Office Hours** | TBA |
| **E-mail Address** | hossein.lamei@utoronto.ca |
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| **Co-Instructor** | Scott Murray (LEC0110) |
| **Office Location** | DH3097C |
| **Office Hours** | TBA |
| **E-mail Address** | TBA |
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| **Co-Instructor** | Iman Setayesh (LEC0109) |
| **Office Location** | DH3097D |
| **Office Hours** | TBA |
| **E-mail Address** | iman.setayesh@utoronto.ca |
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| **Co-Instructor** | Shiyu Shen (LEC0111) |
| **Office Location** | DH3019 |
| **Office Hours** | Thursdays 2-4 |
| **E-mail Address** | shiyu.shen@utoronto.ca |
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| **Co-Instructor** | Daniel Stern (LEC0108) |
| **Office Location** | DH3038 |
| **Office Hours** | TBA |
| **E-mail Address** | dl.stern@utoronto.ca |

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|---|---|
| **Co-Instructor** | Xinli Wang (LEC0114) |
| **Office Location** | DH3060 |
| **Office Hours** | Mondays 11:30-12:30 and Fridays 1:30-2:30 |
| **E-mail Address** | xinliw.wang@utoronto.ca |

## Course Description

Review of functions and their graphs, trigonometry, exponentials and logarithms. Limits and continuity of functions of a single variable. Derivatives and differentiation techniques. Applications of differentiation, including extreme values, related rates and optimization. A wide range of applications from the sciences will be discussed. [40L, 12T]

*Prerequisite:* Minimum 70% in Grade 12 Advanced Functions (MHF4U) Highly Recommended: Minimum 70% in Grade 12 Calculus and Vectors (MCV4U)
*Exclusion:* MAT132H5, MAT133Y5, MAT134Y5, MAT135Y5, MAT137Y5, MAT133Y1, MAT135Y1, MAT135H1, MAT137Y1, MAT157Y1, MAT157Y5, MATA29H3, MATA30H3, MATA31H3, MATA32H3 (SCI)
*Distribution Requirement:* SCI

Students who lack a pre/co-requisite can be removed at any time unless they have received an explicit waiver from the department. The waiver form can be downloaded from here.

## Detailed Course Description

This is the first time that MAT135H5 Differential Calculus is offered at UTM. The course MAT135Y5 Calculus has been replaced by MAT135H5 Differential Calculus + MAT136H5 Integral Calculus. In terms of prerequisites and other program planning, MAT135H5 + MAT136H5 = MAT135Y5.

## Learning Outcomes

On successful completion of MAT135H5, you should be able to solve problems related to differential calculus, which includes limits, derivatives, curve sketching, optimization problems and other related applications. You should aim for a level of understanding that allows you to:

(1) carry out computations with ease;

(2) use your conceptual understanding of the material to solve a range of problems, even ones that are different from, or a variation of problems you've seen before; and,

(3) give an explanation of your solutions to someone who has not seen the material before (i.e. you should aim to understand the material well enough to be able to explain each step in a calculation, but also the general idea behind the solution).

## Textbooks and Other Materials

***Single Variable Calculus: Early Transcendentals, 8th Edition, by James Stewart***. You are expected to have access to the textbook throughout the course.

Option 1: The UTM bookstore sells a package which includes the textbook, solution manual, and a complementary copy of "Calculus Test and Exam Prep: A Collection of Problems and Worked Solutions". The extra booklet is not required but you can use it for extra practice.

Option 2: If you prefer an online textbook, there are access codes to the eBook (which comes with WebAssign). If you retake the course for any reason in another year, you would need to buy another code. The "multi term" access code gives you access for as long as edition 8 is being used. You can buy the eBook here **https://uoftbookstore.com/textbooks/access_codes.asp?** Or by going in to the UTM bookstore.

Important: A WebAssign access code is NOT required to complete the course. However, WebAssign has many nice help features which you may want to use when studying. If you buy the eBook you will have access to these extra help features.

## Assessment and Deadlines

| Type | Description | Due Date | Weight |
|---|---|---|---|
| Final Exam | Cumulative Final Exam | TBA | 40% |
| Term Test | 2 Term tests on 11 Oct. and 15 Nov. at 4-6pm..... (25% for your higher test grade and 15% for your lower test grade) | 2019-10-11 | 25% |
| Term Test | 2 Term tests on 11 Oct. and 15 Nov. at 4-6pm..... (25% for your higher test grade and 15% for your lower test grade) | 2019-11-15 | 15% |
| Assignment | Written assignments | On-going | 6% |
| Assignment | Online assignments | On-going | 8% |
| Other | Tutorial activities | On-going | 6% |
| | | **Total** | 100% |

## More Details for Assessment and Deadlines

You will be assessed in several different ways, including written assignments, online work, group work, term tests, and a final examination. Final grades are based on student performance on assessments as stated here. No extra work can be submitted to improve a student's final grade. Final grades and grade calculations will not be adjusted due to a student's request. Note: After 4 December 2019, no term work remark requests will be accepted.

**Term Tests:**

The 2 term tests are on the following dates:

Test 1 - Friday 11 October 2019 at 16:10 to 18:00

Test 2 - Friday 15 November 2019 at 16:10 to 18:00

Details such as which sections are covered on each term test and which room to go to will be provided later, on Quercus.

Tests 1 and 2 are worth a total of 40% together (25% for your higher test grade and 15% for your lower grade).

**Written Assignments:**

There will be 3 written assignments for this course. Assignments will be posted on Quercus and it is your responsibility to download/print them in time to complete them by the due date (schedule will be available first day of class).

The purpose of the written assignments is to give you some practice in writing detailed solutions to mathematical problems, without any time pressure. You will receive feedback on your writing and on your solutions. You are encouraged to take this opportunity to carefully write your solutions and think about how to best present your reasoning behind them. Questions on the assignments may also appear again on tests and/or the final exam.

Assignments need to be submitted online by the deadline. To submit, you can scan or take a photo of your work (or write your work electronically). Please make sure that images are clear and easy to read before you submit them. Deadlines to submit assignments are extremely strict. Missing the deadline by even a few minutes will mean that you get 0 for that assignment. Medical notes will NOT be accepted for missed written assignments.

**Online Assignments:**

This course uses WebWork, which is a FREE online learning and assessment tool. It will be used for online assignments, and you can access it through Quercus. There are 6 online assignments and the average of your best 5 will count for 8% of your final grade. Online assignments will always be due on Sundays at 11:59pm (schedule will be available first day of class). No extensions will be given and there will be no make-up assignments. Medical notes will NOT be accepted for missed online assignments.

**Tutorial Activities:**

In some weeks (schedule will be available first day of class), there will be a "Tutorial activity" which will count towards your final grade. Details about the tutorial activities will be posted on Quercus ahead of time. You will get more out of each tutorial activity if you read and go over the relevant material before going to your tutorial. There are 6 tutorial activities and the average of your best 5 will count towards 6% of your final grade. **Any student who actively participates in a meaningful way in the tutorial activity will get full marks that week, even if solutions are not completely correct**.

The purpose of the tutorial activities is to give you a chance to work on problems related to the course, often in groups together with other students and with the guidance of the TA. You will get a chance to discuss your ideas with other students and the TA, which will help you prepare for the tests and the exam. Questions from the tutorial activities may also appear again on tests and/or the final exam. Medical notes will NOT be accepted for missed tutorial activities and there are no make-up tutorial activities. You must attend the tutorial you are registered in to get the grade associated with tutorial activities.

## Penalties for Lateness

Late work will not be accepted.

## Procedures and Rules

### Missed Term Work

**There will be no make-up term tests.** If you miss a term test due to illness or other valid reason, you should declare your absence on ACORN and you must provide written documentation such as for example a doctor's note written on the **Official UTM Verification of Illness or Injury** form (available on Quercus under 'Information and Documents'). You must visit the doctor on the day of the test, or the following day at the very latest. You must submit your documentation both in person and online. (Details available on Quercus.) The deadline to submit the documentation will be posted on Quercus. If these requirements are not met, your test mark will be recorded as zero. If valid documentation is provided, the weights will be shifted as follows:

*One missed test:* The test you write will be worth 30% and the final exam will be worth 50%.

We hope that no one will miss both tests.

### Missed Final Exam

Students who cannot write a final examination due to illness or other serious causes must file an online petition **within 72 hours of the missed examination**. Original supporting documentation must also be submitted to the Office of the Registrar **within 72 hours of the missed exam**. Late petitions will **NOT** be considered. If illness is cited as the reason for a deferred exam request, a U of T Verification of Student Illness or Injury Form must show that you were **examined and diagnosed at the time of illness and on the date of the exam, or by the day after at the latest**. Students must also record their absence on ACORN on the day of the missed exam or by the day after at the latest. Upon approval of a deferred exam request, a non-refundable fee of $70 is required for each examination approved.

### Academic Integrity

Honesty and fairness are fundamental to the University of Toronto's mission. Plagiarism is a form of academic fraud and is treated very seriously. The work that you submit must be your own and cannot contain anyone elses work or ideas without proper attribution. You are expected to read the handout How not to plagiarize (http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize) and to be familiar with the Code of behaviour on academic matters, which is linked from the UTM calendar under the link Codes and policies.

## Final Exam Information

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| Duration: | 2 hours |
| Aids Permitted: | None |

## Additional Information

**Calculators:**

Calculators will **NOT** be allowed during term tests and the final examination. A non-programmable, non-graphing calculator may be used while working on assignments and homework.

**Tutorials:**

Tutorials start the week of 16th September 2019. All students must enroll in a tutorial section. You should attend only the tutorial that you are enrolled in. It is important to attend your tutorial every week, starting the week of 16th September. Tutorials give you a chance to study with the help of the TA and together with other students. Attending tutorials and actively participating in them will increase your chances of doing well on tests and the exam.

A list of which TA is responsible for which tutorial can be found on Quercus under 'Information and documents; TA and instructor contact info'.

**Office Hours and the Math Learning Centre:**

Please do not hesitate to ask us for help. Both the instructors and TAs of MAT135H are available for extra help outside of class time, during our scheduled office hours. You do not need an appointment to visit office hours. Just show up, but come prepared with questions you have. For example, you can ask questions about a particular concept or something from lectures or the textbook that you want to clarify. Or you can bring a problem you have tried to work on but have questions about (in that case please bring the work that you have done, even if it is not complete). See the course website for any updates on office hour times.

The teaching assistants will have office hours in room DH2027 (the**Math Learning Centre**). A schedule will be posted on the door as well as on Quercus. You can go to any office hour, not only your own TAs.

**Course feedback:**

A few weeks after the start of term, students will be given the opportunity to provide feedback to the instructor regarding the course and their teaching. Details will be posted on Quercus. You are strongly encouraged to participate and provide your feedback to your instructor.

**Help and RGASC:**

If you are finding the course difficult there are many ways in which you can get help. Please ask questions in lectures if something is unclear. Longer questions can be asked in tutorials or during office hours (both the instructors and teaching assistants have office hours). Tutorials are also a great opportunity to work through examples on topics of your choice and ask questions about them. Working in study-groups outside class where you can compare solutions and tackle problems together might also be helpful. The **Robert Gillespie Academic Skills Centre (RGASC)** provides support and a variety of resources to help students develop their numeracy and scientific literacy skills. The location of the centre is in room MN3251 (3rd floor). Math drop-in sessions give students an opportunity to get more general assistance with the skills they need to succeed in their math courses at UTM. These appointments are generally short and offered on a first come, first served basis. (More information: https://www.utm.utoronto.ca/asc/appointments-undergraduate). As well, **Facilitated Study Groups (FSGs)** are a great way to help you improve your study skills and meet other students in your courses. Check out the FSGs offered for various courses and other math and science courses get advice on study methods from students who have taken the course, and done well. (More information: https://www.utm.utoronto.ca/asc/facilitated-study-groups-fsgs) . You can also visit the Academic Skills Centre for study tips and other help. Remember that all of these options are there to help you, so please take advantage of them if you need it. Most important of all is to keep up with the homework and to not fall behind. Ask for help early rather than the week of a test! Mathematics is not something you learn overnight, and falling behind is one of the most common causes of not doing well in the course.

More information regarding academic resources can be found here: http://www.utm.utoronto.ca/dean/academic-resources

Last Date to drop course from Academic Record and GPA is November 7, 2019.