University of Toronto Mississauga

MAT135Y5Y Calculus: Fall 2015 – Winter 2016

Course Description:

This is a 1st year Calculus course with some examples of applications to Physics, Chemistry and other Sciences. Although the course will have a theoretic component, emphasis will be on concepts, techniques and applications. Theorems will be stated clearly, but mostly without proof and many examples will be included in the lectures.

Instructors:

Section:	Name:	Contact:	Office Hours (Fall Term):	Office Hours (Winter Term):
LEC0101	Dr. Marina Tvalavadze	marina.tvalavadze@utoronto.ca Office: DH3040 Phone: 905-569-5698	Wed 1-3pm	TBA
LEC0102	Christopher Eagle	cjeagle@math.utoronto.ca Office: DH3013 Phone: 905-569-4250	Tue. 11-12 Wed. 11-12 Thu. 11-12	TBA
LEC0103	Dr. Maria Wesslén (course coordinator)	maria.wesslen@utoronto.ca Office: DH3015 Phone: 905-828 5323	Tue. 11-12 Wed. 2-2:45 Thu. 11:10-12:00	TBA
LEC0104	Dr. Maria Wesslén (course coordinator)	maria.wesslen@utoronto.ca Office: DH3048 Phone: 905-828 5323	Tue. 11-12 Wed. 2-2:45 Thu. 11:10-12:00	TBA
LEC0105	Dr. Jianlu Zhang	jianlu.zhang@utoronto.ca Office: DH3015 Phone: 905-828-3809	Tue. 4-5 Wed 4-5 Thu. 4-5	TBA
LEC0106	Nadya Askaripour	nadya.askaripour@utoronto.ca Office: DH3097A Phone: None	Wed. 11-12 Fri 9:30-10:30	TBA

Teaching Assistants (Fall Term):

Name	E-mail	Office hours
Elektra Maniatis	elektra.maniatis@mail.utoronto.ca	The teaching assistants will have office hours in room DH2027 (the **Math Help Centre**). A schedule will be posted on the door as well as on Blackboard. You can go to any office hour, not just your own TAs.
Esther Itimi-Elo	esther.itimi.elo@mail.utoronto.ca	
Gail Hu	gail.hu@mail.utoronto.ca	
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Wael Louis	wlouis@ece.utoronto.ca	

Office Hours:

Please do not hesitate to come ask us for help. Both the instructors and TAs of MAT 135 are available for extra help outside of class, during our scheduled office hours (see above for dates/times).

Textbook:
Single Variable Calculus: Early Transcendentals, 8th Edition, by James Stewart. You are expected to have access to the textbook throughout the course, as homework will be given from problems in the book. The UTM bookstore sells a package which includes the textbook, solution manual, access code to WebAssign (see below) and a complementary copy of "Calculus Test and Exam Prep: A Collection of Problems and Worked Solutions". This package can be bought or rented. Alternatively, there are access codes to WebAssign with or without an electronic version of the textbook (eBook). **For help on selecting a package, please read "Choosing a Textbook Package for MAT135" on Blackboard under "Course Information".**

Course Website: You can access the MAT 135 course website through the University of Toronto Blackboard Portal **https://portal.utoronto.ca/**. After logging in, click on the course title under My Courses to enter the website. All important course information will be posted on Blackboard throughout the course. You should therefore log in regularly to check for updates. You will also be able to see your marks for written assignments and term tests on Blackboard. Email announcements will be sent through Blackboard so make sure you check your utoronto email regularly.

Calculators: Calculators will **NOT** be allowed during Tests and the Final Exam. A non-programmable, non-graphing calculator may be used while working on Assignments and Homework.

Marking Scheme:
Final Exam: 40%
4 Tests: 42% (6% for your lowest test mark and 12% each for your remaining three test marks)
Your best 5 out of 6 written assignments: 5%
Your best 10 out of 12 WebAssign online assignments: 10%
CRA: 3%

Tests:
The 4 term tests are on the following dates:

Test 1 – Oct. 23, 2015	Test 2 – Nov. 27, 2015
Test 3 – Feb. 5, 2016	Test 4 – Mar. 18 2016

The tests will be held during the "Practical" for the course, which is Fridays 15:10-17:00. Details such as which sections are covered on each test as well as which room to go to will be provided later, on Blackboard. The '**Practical**' on your timetable is there to indicate the time of your term tests. See information on Blackboard under 'Tests'.

Missed Tests:
There will be no make-up tests. If you miss a test due to illness or other valid reason, you should report your absence on ROSI 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 Blackboard). This documentation should be given in person to Maria Wesslén within the first week of classes following the test (for Test 2 you can hand it in during the first week of the winter term). However, it must be *dated* within a day of the test. Otherwise your test mark will be recorded as zero. Please also keep a copy for your records. If valid documentation is provided, the weights will be shifted as follows:
One missed test: The other three tests will be worth 14% each.
Two missed tests: The other two tests will be worth 14% each and the final exam will be worth 54%.
Three missed tests: The other test will be worth 20% and the final exam will be worth 62%.
We hope no one will miss all four tests!

Calculus Readiness Assessment (CRA):
This is an online test that will be written 25 – 27 September 2015 by every first year calculus student at UTM and will be worth 3% of your final mark. The test is based on high school material and the main purpose of this test is for you to assess your own readiness for University Calculus, as well as to give you an opportunity to review some essential prerequisite material. Some of you may already have studied for this during the summer. If not, please read the **CRA information on Blackboard** as soon as possible. It tells you how to get your login name and how to get started.

Tutorials:
Tutorials start the week of 14th September 2015. All students must enroll in a tutorial section (on ROSI/Acorn). You should attend only the tutorial you are enrolled in. The main purpose of the tutorials is to give you an opportunity to ask questions and work through examples together with your TA. To get the most out of your time, it is therefore best if you review the lecture material and work through the homework questions BEFORE your tutorial, so that you are prepared with questions.

Written Assignments:
There will be 6 written assignments for this course, but only your best 5 will count towards 5% of your final grade. Assignments will be posted on Blackboard and it is your responsibility to download/print them in time to complete them by the due date (see schedule). Assignments should be given to your TA at the **beginning** of your tutorial. You must submit your assignments in the tutorial you are officially registered in. Your TA will mark it and return it in the following tutorial. **No extensions will be given.** There will be no make-up assignments.
Note: It is ok (and you are encouraged) to work together on material related to the course, including discussing the written assignments. HOWEVER, you must write up your own solutions independently. **It is an academic offence to copy someone's solution, or to let someone copy yours.** Students are expected to adhere to the Code of Behaviour on Academic Matters which can be found in the UTM Calendar:

https://registrar.utm.utoronto.ca/student/calendar/calendar.pl (click on Codes and Policies)
Also read www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize

WebAssign Online Assignments:
This course uses WebAssign, which is an online learning and assessment tool. It will be used for online assignments, but you can also use it to review a topic and to get more practice working through problems. There are 12 online assignments but only your best 10 will count for 10% of your final grade. Online assignments will always be **due Fridays at 11:59pm**, regardless of which tutorial you are enrolled in. **No extensions will be given.** Each assignment consists of about 10 questions on topics recently covered in the lectures. Each assignment can be submitted 100 times(!) and only your highest mark will count. WebAssign also indicates if your answer is correct or not, and it can give you hints and help you work through a similar problem. Apart from online assignments the purpose of using WebAssign is to help you when learning a new topic, help you study for tests and give you more practice problems; all with instant feedback. The eBook (electronic version of the textbook) can be purchased together with Webassign. The eBook has lots of videos, homework hints and other help features.

Getting Started with WebAssign:
Detailed WebAssign getting started instructions are available on Blackboard under "Online Assignments".

- The WebAssign course will become **available on 7 September**.
- Go to https://webassign.net/login.html and click "I have a class key"
- The class key depends on which type of access code you have:
  For access codes WITH eBook: **utoronto 9731 4671**
  For access codes WITHOUT eBook: **utoronto 2799 9674**
- The institution code is: **utoronto**
- Please enter your student number and use your full name as written on your T-card. If you prefer not to use your student number on your WebAssign account, then you may enter your CRA username instead.
- Please **only create one account**!
- To use WebAssign you will need an **access code** (unless you have already signed up in the past). However, there is a short grace period where you can use WebAssign without an access code. So you can set up your account right away (after 7 September) and try the system, even if you don't have an access code yet.
- If you have purchased an access code in the past, you **do not** need to purchase a new one. See instructions on Blackboard under "Course Information".

Help:
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. WebAssign offers multiple help tools and a large number of extra problems. Working in study-groups outside class where you can compare solutions and tackle problems together might also be helpful. The Academic Skill Centre will organize a number of PFSGs (Peer Facilitated Study Groups) where students who have taken the course in previous years help you work through problems together with other students. (More information will be available on Blackboard.) 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 failure.

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

MAT135 Course Outline

This is a tentative course outline. The Sections correspond to Single Variable Calculus: Early Transcendentals, 8th Edition, by James Stewart.

Fall Semester:

Week/Date		Sections to be covered	Additional Information
1	7 Sept. to 13 Sept.	**SHORT REVIEW** of the following topics: Appendix A – Numbers, inequalities, absolute values Appendix B – Coordinate geometry and lines 1.1 - Functions 1.2 - Essential functions	Labour Day Monday 7 September (university closed) Lectures begin 8 September No tutorials this week.
2	14 Sept. to 20 Sept.	1.3 - New functions from old functions 1.4 - Exponential functions 1.5 - Inverse functions and logarithms Appendix D - Trigonometry	Tutorials start CRA Hands on Help Session Friday 18 September 3-6pm
3	21 Sept. to 27 Sept.	1.6 cont. (Inverse trigonometric functions) 2.2 - Limits 2.3 - Limit laws	Sept 21: Last day to change tutorials. Assignment 1 (written) is due in tutorials this week **CRA online test 25-27 September**
4	28 Sept. to 4 Oct.	2.5 - Continuity 2.6 - Limits at infinity; horizontal asypmtotes	Assignment 2 (online) is due Friday 2 October at 11:59pm.
5	5 Oct. to 11 Oct.	2.7 - Derivative as a rate of change 2.8 - Derivative as a function 3.1 - Derivatives of polynomials and exp.	Assignment 3 (written) is due in tutorials this week
6	12 Oct. to 18 Oct.	3.2 - Product and quotient rules 3.3 - Derivatives of trigonometric functions 3.4 - Chain rule	Thanksgiving Monday 12 October (university closed) Assignment 4 (online) is due Friday 16 October at 11:59pm.
7	19 Oct. to 25 Oct.	3.5 - Implicit differentiation 3.6 - Derivatives of logarithmic functions	**23 Oct. - Term Test 1**
8	26 Oct. to 1 Nov.	3.7 - Rates of change in the sciences 3.8 - Exponential growth and decay 3.9 - Related rates	Assignment 5 (online) is due Friday 30 October at 11:59pm.
9	2 Nov. to 8 Nov.	4.4 - l'Hopital's rule 4.1 - Max and min values	Assignment 6 (online) is due Friday 6 November at 11:59pm.
10	9 Nov. to 15 Nov.	4.3 - Derivatives and graphs 4.5 - Curve sketching	Assignment 7 (written) is due in tutorials this week
11	16 Nov. to 22 Nov.	4.7 - Optimization problems 4.2 - The mean value theorem	Assignment 8 (online) is due Friday 20 November at 11:59pm.
12	23 Nov. to 27 Nov.	4.9 - Antiderivatives Appendix E - Sigma notation	**27 Nov. - Term Test 2**
30 No.-1 De.		Both 30 November and 1 December run on a 'Monday schedule'.	

Winter Semester:

Week/Date		Sections to be covered	Additional Information
1	4 Jan. to 10 Jan.	5.2 - The definite integral 5.3 - The fundamental theorem of calculus	Lectures and tutorials resume Assignment 9 (online) is due Friday 8 January at 11:59pm
2	11 Jan. to 17 Jan.	5.4 - Indefinite integrals 5.5 - The substitution rule	Assignment 10 (written) is due in tutorials this week
3	18 Jan. to 24 Jan.	6.1 - Areas 6.2 - Volumes	Assignment 11 (online) is due Friday 22 January at 11:59pm
4	25 Jan. to 31 Jan.	6.5 - Average values 7.1 - Integration by parts	Assignment 12 (written) is due in tutorials this week
5	1 Feb. to 7 Feb.	7.2 - Trigonometric integrals 7.3 - Trigonometric substitution	**5 Feb. - Term Test 3**
6	8 Feb. to 14 Feb.	7.4 - Partial fractions 7.5 - Strategy for integration	Assignment 13 (online) is due Friday 12 February at 11:59pm
Reading Week (15-21 February)			
7	22 Feb. to 28 Feb.	7.8 - Improper integrals 9.3 - Separable equations	Assignment 14 (online) is due Friday 26 February at 11:59pm
8	29 Feb. to 6 Mar.	9.5 - Linear equations 11.1 - Sequences	Assignment 15 (written) is due in tutorials this week
9	7 Mar. to 13 Mar.	11.2 - Series 11.3 - The integral test	Assignment 16 (online) is due Friday 11 March at 11:59pm
10	14 Mar. to 20 Mar.	11.4 - The comparison tests 11.5 - Alternating series	**18 Mar. - Term Test 4**
11	21 Mar. to 27 Mar.	11.6 – Absolute Convergence and ratio and root tests 11.7 - Strategy for testing series 11.8 - Power series	Good Friday 25 March (university closed) Assignment 17 (online) is due Friday 25 March at 11:59pm.
12	28 Mar. to 3 Apr.	11.9 - Representations of functions as power series 11.10 - Taylor and Maclaurin series Catch-up/Review	Assignment 18 (online) is due Friday 1 April at 11:59pm.
	4 Apr..	4 April runs on a 'Friday schedule'.	

Suggested Homework Problems:

For each topic covered in this course you are expected to do homework questions. You are NOT required to hand in your solutions, but it is important that you do all of the questions to prepare for tests and the exam. This is a list of the minimum number of problems you should work on throughout the course. To properly prepare for tests and the final exam you may also want to work on the rest of the problems from the Complete Problem List (posted on Blackboard under Course Materials), especially if you are finding a certain topic or a type of question difficult. You may want to start with the Suggested Homework List below, and when it comes time to prepare for a test/exam you can work on more problems from the full homework list.

Problems refer to: Single Variable Calculus: Early Transcendentals, **8th Edition**, by James Stewart.

Section:	**Suggested Homework Problems:**
Diagnostic Test: Algebra (p. xxvi)	1-10
Appendix A - Inequalities and Absolute Values	9, 11, 23, 29, 37, 39, 49, 51, 53, 55, 59
Appendix B – Coordinate Geometry and Lines	1, 7, 17, 21, 27, 29, 33, 35, 37, 53*
Appendix D - Trigonometry	9, 17, 29, 31, 61, 63, 65, 69, 71, 73, 79
1.1 - Functions	7, 9, 31, 33, 35, 37, 43, 45, 49, 53, 61, 69, 73, 75
1.2 - Essential Functions	3, 5, 15, 19
1.3 - New functions from old functions	3, 5, 7, 13, 17, 23, 29, 33, 41, 53, 57, 63*
1.4 - Exponential functions	1, 3, 13, 15, 17, 19, 37*
1.5 - Inverse functions	1, 5, 11, 15, 19, 21, 23, 37, 41, 51, 53, 57, 63, 67, 71
Chapter 1 Review (p. 68-70)	Concept Check: 3, 8, 13; T/F: 1, 5, 7, 11, 14 (F); Ex: 17, 23
2.2 - Limits	1, 3, 5, 7, 17, 31, 33, 35, 37, 39, 41, 43
2.3 - Limit laws	11, 15, 17, 21-31 (odd), 37, 39, 41, 43*, 51, 59*, 65*
2.5 - Continuity	3, 5, 7, 17, 19, 21, 23, 35, 41, 45, 47, 51, 55, 69, 71
2.6 - Limits at Infinity	3, 9, 19, 21, 23, 27, 31, 33, 35, 39, 49, 55, 57, 65a, 67
2.7 - Derivative as a rate of change	5, 7, 11, 13, 17, 21, 25, 35, 37
2.8 - Derivative as a function	3, 25, 27, 29, 41, 47, 51
Chapter 2 Review (p. 165-168)	T/F: 1, 7, 13
3.1 - Derivatives of polynomials and exp.	3-31 (odd), 33, 49, 51, 55, 61, 63, 77, 83
3.2 - Product and quotient rules	3-27 (odd), 33, 45, 49, 53
3.3 - Derivatives of trig. functions	1, 5, 13, 15, 21, 31, 33, 39-49
3.4 - Chain rule	9-17 (odd), 27, 31-45 (odd), 49, 53, 59, 63, 65
3.5 - Implicit differentiation	5, 9, 13, 17, 25, 29, 35, 49, 51, 57
3.6 - Derivatives of logarithmic functions	2, 7, 11, 17, 19, 25, 33, 41, 43, 45, 49, 55*
3.7 - Rates of change in the sciences	1, 5, 7, 15, 21, 23, 33
3.8 - Exponential growth and decay	3, 9, 11, 13, 15, 17
3.9 - Related rates	3, 5, 15, 19, 23-29 (odd), 33, 43, 45
Chapter 3 Review (p. 266-269)	Concept Check: 2a-n; T/F: 2(F), 6(F), 9, 11; Ex: 93, 107*
4.1 - Max and min values	5, 9, 13, 31, 39, 43, 49, 53, 57
4.2 - The mean value theorem	3, 11, 17, 19, 21, 25
4.3 - Derivatives and graphs	1, 7, 11, 17, 29, 33, 43, 49, 57, 89*
4.4 - l'Hopital's rule	15-27 (odd), 33, 43, 47-65 (odd), 75*, 79, 87*
4.5 - Curve sketching	9, 15, 21, 25, 29, 35, 41, 51, 61, 63, 65
4.7 - Optimization problems	3, 5, 7, 11, 15, 21, 25, 27, 31, 35, 37, 43, 49, 51, 73
4.9 - Antiderivatives	3, 5, 9, 15, 29, 33, 39, 47, 59, 61
Chapter 4 Review (p. 358-362)	Concept Check: 8*, 9
Appendix E - Sigma notation	3, 9, 15, 19, 29, 31, 33, 43

Problems for the Winter semester will be posted on Blackboard later in the year.

Good luck and welcome to the course!