Université d'Ottawa | University of Ottawa
Faculté des sciences | Faculty of Science
Département de Mathématiques et de statistique • Department of Mathematics and Statistics

MAT1300 D
Mathematical Methods I
Fall 2018

Professor: **Guy Beaulieu**
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Class Schedule:

Monday,	5:30pm – 7:00pm	MNT 203
Wednesday,	5:30pm – 7:00pm	MNT 203

Discussion Groups:

DGD1	Monday,	2:30pm – 4:00pm	LPR 155
DGD2	Tuesday,	11:30am – 1:00pm	MRT 256
DGD3	Thursday,	2:30pm – 4:00pm	TBT 333

The discussion group is a weekly 80-minute session animated by a teacher's assistant. During this session, the T.A. will solve exercises related to the material covered in the classes from the previous week. Take advantage of these sessions to increase your understanding of the subject! During the session, I will provide you with a list of suggested exercises; the T.A. will also be able to answer questions about these problems if you are having difficulties solving them.

Help Center in Mathematics and Statistics:

Some students may have trouble understanding concepts introduced in mathematics or statistics courses. If you are in this situation, you have many options to get help. The Help Centre is staffed by expert consultants who can help you. Please consult their website, **http://www.mathstat.uottawa.ca/ugrad/help_center_en.html,** for more information (location and time schedule).

Office Hours:

In addition to the T.A. and the Help Center, you also have access to another method of receiving help and advice, with no extra cost: me – your professor! For your specific needs, I am available before and after our scheduled class times for your questions. Don't be shy and make an appointment to see me.

Official Course Description:

Review of elementary functions. Limits. Geometric series. Differential and integral calculus in one variable with applications. Functions of several variables. Partial derivatives.

Prerequisites:

One of Calculus and Vectors (MCV4U) or MAT 1339. The courses MAT 1300, MAT 1308, MAT 1320, MAT 1330 cannot be combined for credits. This course is intended primarily for students in the School of Management.

Textbook:

- Shana Calaway, Dale Hoffman, and David Lippman, *Applied Calculus*

  This is an open source book. You can download the pdf here:
  http://www.opentextbookstore.com/appcalc/appcalc.pdf

Internet Resources:

Please ensure you are registered in the course and in the correct section. All lecture notes and other announcements will be communicated through Virtual Campus. It is your responsibility to check for announcements.

Evaluation:

Your final mark will be calculated with your results obtained on the following components:

- 2 tests worth a total of 50% (25% each).
  - Test 1: **Monday, October 15th, 5:30pm – 7:00pm, MNT 203.**
  - Test 2: **Monday, November 19th, 5:30pm – 7:00pm, MNT 203.**
- A final exam worth 50%
  - Please check your personal exam schedule when it is available to obtain the information about the date, time, and location of the exam.

Important:

- If your grade for the final exam is less than 40%, then your final mark will be **F** regardless of your previous marks.
- If you are absent from the midterm for a valid reason (for example for medical reason supported by a University of Ottawa Health Services document), you must inform your professor as soon as possible and show him the appropriate documentation once you've returned to class. The weight of the midterm will then be transferred to the final exam.
- All types of academic fraud (i.e. cheating, plagiarism, etc.) will be punished severely – possible repercussions vary from receiving 0 on the evaluation up to an expulsion from the University.

Calculators:

No calculators are permitted for this class.

Grade Changes:

If you feel there is a problem with your grade on a midterm, you must write one paragraph explaining each error. Then, please hand in your paragraph of explanation in addition to the original midterm for grade reconsideration. You must allow at least one week for grade reconsideration. Re-grading can only be done by this method. Please do not approach me or your TA during class times to discuss grade changes. Once one week has passed after you have turned in your paragraph and the original assignment, you can come to the next office hour to discuss your grade. Grade changes cannot be discussed over email.

Plagiarism:

Please note that the University of Ottawa has a very strict policy on plagiarism and academic fraud. If you are found guilty of either, the University can give you an F for the course, assign additional credit hours on top of your degree requirements, and/or expel you from the University and note the reason on your transcript. Please read the University policy on academic fraud included with the course material and ask me if there is anything you do not understand or consult http://sass.uottawa.ca/sites/sass.uottawa.ca/files/plagiarism.pdf. Any students caught cheating will be asked to leave and will have their cases referred to the Faculty.

University Policies on Harassment and Assault:

Please also note the university policies on harassment and assault available online at http://www.uottawa.ca/services/sex-har/eng/. If you have experienced harassment (sexual, racist, homophobic etc) by faculty, staff or other students, you can report the harassment to the sexual harassment officer, Diane Roller (562-5222). You might also wish to contact a resource such as the Ottawa Rape Crisis Center (613 562-2333, http://www.orcc.net) or the Sexual Assault Support Centre of Ottawa (613 234-2266).

Course Schedule (Tentative):

Date	Topics Course Notes	Topics from the online text book	Recommended exercises
Sept. 5th Sept. 10th	**Pre-calculus Review** The Real Number Line Absolute Value Exponents Factoring Polynomials Graphs Lines Functions	**1.1-1.5**	**1.1: 1-8,22,25-30** **1.2: 1-4,21-26** **1.3: 1-5,7-9** **1.4: 1-24**
Sept. 12th Sept. 17th Sept. 19th	**Limits, Exponentials, and Logarithms** Limits Continuity Exponential Functions Exp. Functions with Base e Logarithmic Functions Exponential Growth and Decay	**2.1,** **1.6,** **1.7,** **1.8**	**2.1: 1,2,5-9** **1.6: 19-26** **1.7: 1-6** **1.8: 9-16, 25, 27, 28, 30-33**
Sept. 24th Sept. 26th	**The Derivative - Part 1** Introduction to the Derivative Basic Rules of Differentiation Rates of Change: Velocity and Marginal Product and Quotient Rules Higher-Order Derivatives	**2.2,** **2.3,** **2.4,** **2.6,** **2.9**	**2.2: 15, 18 (extra problems)** **2.3: 4-11** **2.4: 7-11 (extra problems)** **2.6: 7-10, 16-22** **2.9: 16-19**
Oct. 1st Oct. 3rd	**The Derivative-Part 2** The Chain Rule Implicit Differentiation Derivatives of Exp. Functions Derivatives of Log. Functions	**2.4,** **2.5,** **2.11**	**2.5: 7-11 (extra problems)** **2.11: 1-10, 15, 16**
Oct 15th	**Test 1—OCT 15th in the class**		
Oct. 10th Oct. 17th	**Applications of the Derivative** Increasing and Decreasing Functions Relative Extrema Concavity Business and Economics Applications	**2.6,** **2.7,** **2.9**	**2.7: 3-17,22-24**

	Optimization Problems		
Oct. 29th Oct. 31st	**Graph Analysis and Differentials** Asymptotes Curve Sketching	**2.8**	**2.8: 10-14**
Nov. 5th Nov. 7th	**Integrals** Indefinite Integrals Definite Integrals Area Between two Curves	**3.1,** **3.2-3.3,** **3.6,** **3.8**	**3.1: 18, 19** **3.2: 1-8** **3.3: 1-21** **3.6: 6-13** **3.8: 5-12**
Nov. 12th Nov. 14th	**Integration by Substitution** Integration by Substitution Integrals of Exp. and Log. Functions	**3.4**	**3.4: 1-12**
Nov. 19th	**Test 2-Nov 19th in the class**		
Nov. 21st Nov. 26th	**Integration by Parts** Integration by Parts and Present Value **Improper Integrals** Improper Integrals	**3.5,** **3.7 +** **Improper Integral (not in the text book)**	**3.5: 1-10** **3.7: 1, 3, 7** **Extra problems for Improper Integral**
Nov. 28th Dec. 3rd	**Multi-variable Functions** Functions of Several Variables Partial Derivatives Extrema of Functions of Two Variables	**4.1,** **4.2,** **4.3**	**4.1: 3** **4.2: 1-17, 19, 20** **4.3: 1-0, 13-18**
Dec. 5th	**Review**		