

MATH 100:701

DIFFERENTIAL CALCULUS

with Applications to Physical Sciences and Engineering

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September – December 2018

Basic information

- Course website:
<http://www.math.ubc.ca/~sbach/teaching/2018W/100/Info.html>
- Times and rooms:
 - Lecture: W 11-12 in PHRM 1201
 - Discussions: MF 9-10 in SWNG 405, MF 9-10 in SWNG 407, MF 2-3 in DMP 201, MF 2-3 in SPPH B151
- My office: MATH 228
- Contact me: sbach@math.ubc.ca
- Office hours: Wednesday 4-6 in LSK300
- Textbooks: Lecture notes will be provided through the website as the course progresses. A very complete textbook is available online at http://www.math.ubc.ca/~CLP/CLP1/clp_1_dc.pdf. For further reading, the library always welcomes you.

About the course

The course will cover elementary aspects of differential calculus. We will discuss: sequences and their limits, series, real functions, continuity, the derivative and its properties, the mean value theorem, minima and maxima.

Beyond these ‘technical’ goals, the course also aims at developing basics of mathematical literacy in English. This implies both the construction of a mathematically sound argument and its translation in a concise, coherent and efficient text.

Homework, Exams and Final Grade

On submitted work

All assertions require an argument unless the problem states otherwise. No matter the operative word ('find', 'solve', 'establish', 'calculate', 'determine',...), you must justify your answer.

Written work should be presented carefully, in complete English sentences, and with sufficient detail. A correct sequence of formulas will only receive partial credit, an unstructured cloud of formulas will receive none.

When writing your solution to the problems, keep the following in mind: 'What is conceived well is expressed clearly, And the words to say it arrive without difficulty.' (N. Boileau, 1674) This in turns means that if you find yourself unable to express what you have in mind, then your ideas are most probably not clear yet.

Homework assignments

Each week, there will be a set of WebWorK questions posted through Canvas at <https://www.canvas.ubc.ca>, as well as two problems posted on the website. While the WebWorK assignment is mostly about solving simple questions immediately related to the content of the course that week, the problems require a little more creativity and a fully composed solution. These solutions will be evaluated on both the mathematical accuracy and the language correctness.

Learning mathematics from lectures or a textbook only is hopeless: it is absolutely essential for your understanding to work with new concepts and try to solve problems directly related to the course material. Independently of the points towards the final grade you may receive on your homework solutions, it is crucial to work on the problem sets in order to understand the material and to do well in the exams.

Although you are encouraged to discuss the problems with your peers, each of you must submit an independent written solution. Do not mix sharing ideas with sharing submitted work.

You will receive your weekly grades through Canvas at <https://www.canvas.ubc.ca>.

Exams

Your final grade will be composed out of

1. A weekly quiz taking place during the discussion section
2. One midterm exam taking place in class on October 17, 2018, and lasting 50 minutes
3. One final exam to be scheduled in the exam period

Please read carefully UBC's policies on academic honesty <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,286,0,0#15620> as well as on academic misconduct <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,959>. Cheating will not be tolerated.

Final Grade

The final grade is computed as such:

Homework: 15%; Quizzes: 15%; Midterm: 15%; Final: 55%.

In calculating your score for the homework and the quizzes, I will drop your lowest score. These include missed assignment.

If you are to miss the midterm, let me know in advance of your legitimate reason. In case of an emergency, please contact me when the emergency is over and provide some proof of it. In both cases, your absence will be noted and the missed work will not count towards the final grade. Otherwise, the missed work will receive the grade 0. A student must finish a significant amount of term work in order to pass.

In the case of the final exam, the students should contact the Department of Mathematics office and the missed final will be handled in a formal way.

Piazza discussion forum

A monitored online forum of discussion called Piazza is accessible through the Canvas platform. Please feel free to exchange ideas, ask and answer questions, share tips with your fellow students. There are four rules: (i) the exchanges are exclusively related to the course (ii) you are not allowed to post solutions of homework assignments (iii) the discussions contribute to a respectful environment <http://www.hr.ubc.ca/respectful-environment/files/UBC-Statement-on-Respectful-Environment.pdf> and (iv) they are written in English.

Note that although Piazza is integrated in UBC's Canvas, it is run by an independent private company. So before you create an account, read the following notification carefully:

The Piazza tool is stored on servers outside Canada. When you access this site from within UBC's Canvas environment, you are being transferred to these servers. In order to protect your identity, UBC obfuscates your user ID. However, Piazza does require you to create an account on their servers. While Piazza adheres to strict U.S. privacy regulations (FERPA), UBC cannot guarantee security of your private details on servers outside of Canada. Please exercise caution whenever using personal information. You may wish to use a pseudonym to protect your privacy if you have concerns.

Please also note that you can choose to opt-in to an additional service called Piazza Careers during the account creation process. By doing so, you allow Piazza to share your profile and course participation information to third party companies which may add you to their mailing lists. If you do not wish to share this information, you can deselect the opt-in checkbox. Please feel free to

contact us at UBC (lt.hub@ubc.ca) or Piazza's support team (team.piazza.com) if you have any questions about your privacy.

On cellphones, tablets and computers

You are not allowed to use any of them in the lecture and recitation rooms. If you have special needs requiring a technological assistance, please briefly notice the instructors.