MATH 100 - Differential Calculus with Applications to Physical Sciences and Engineering
Session 2017W Term 1, September - December 2017

This document provides only a selection of information regarding the course. You should get familiar with the information in the course webpage:

https://www.math.ubc.ca/%7Eyhkim/yhkim-home/teaching/Math100-2017/home.html

The instructor in charge is Young-Heon Kim

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<th>Sections</th>
<th>Instructor</th>
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<tr>
<td>100 section 102</td>
<td>Tai-Peng Tsai</td>
<td>Mathematics 100</td>
<td>TuTh 8-930</td>
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<tr>
<td>100 section 103</td>
<td>Patrick Walls</td>
<td>Mathematics 100</td>
<td>MWF 12-1</td>
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<td>100 section 104</td>
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<td>100 section 105</td>
<td>Dragos Ghioca</td>
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<td>Frederic Lasserre 105</td>
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<td>100 section 107</td>
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<td>100 section 109</td>
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<td>TuTh 930-11</td>
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Assessment

- Math 100 is a three-credit course, with three hours of lectures per week, for one term.
- Your Maths100 grade will be computed based on the following formula:
  - Final Exam 60%
  - 5 quizzes totalling 25%
  - Course-common WeBWorK assignments 15%

Textbook(s)

Primary text - CLP Calculus

- The textbook and problem book can be found here.
- These were written for Mathematics 100 and 180 by three UBC faculty, Joel Feldman, Andrew Rechnitzer and Elyse Yeager.
- In time the source files for the text and problem set will be released under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (or similar).

Supplementary texts

- Mooculus by Fowler and Snapp - download link. Their site also has links to video lectures which you might find useful.
• **APEX Calculus** by Hartman et al - [download link](https://example.com). Note that you only require Volume 1 for this course.
• **Active Calculus** by Boelkins, Austin and Schlicker - [download link](https://example.com).

**Quizzes**
- Quizzes will be held every second week in your **normal lecture time and place**.
  - Each quiz will focus on the previous 2 weeks of material, but may contain any earlier material.
  - The papers and solutions for all quizzes are below.
- Each quiz will be 20 minutes long and consist of
  - 2 very short answer questions
  - 2 short answer questions
  - 1 long answer question
- though this may change later in the term.
- The quizzes will be held on the following Thursdays and Fridays:
  - September 21 & 22
  - October 5 & 6
  - October 19 & 20
  - November 2 & 3
  - November 16 & 17
- Note - if your class meets Thursdays then your quizzes will be on the 21, 5, 19, 2 & 16. While if your class meets Fridays then you will have quizzes on the 22, 6, 20, 3 & 17.

**WeBWorK link and homework problems**
- Math 100 use the [WeBWorK](https://example.com) online homework system.
- You access the system through **MATH100-ALL_2017W1**.
- You will need your CWL login and password to access the homework sets.
- This system has many advantages (including slightly randomizing homework problems and providing you with instant feedback).
- Each week you will be assigned about 10 to 20 WeBWorK problems which will be due the following week.
- Assignment 0 will open early in the first week.
  - It is designed to help you learn the WeBWorK system.
  - Please start and complete it in the first week of classes - it will make the other assignments easier.
  - It is not used for assessment - it does not count towards the WeBWorK component of your marks.
- **All other assignments will be open from 1am on Thursday mornings and due 11pm on Friday night (1 week later).**
  - This gives you time to seek homework help before the weekend.
It also means there is a small overlap between assignments.

Please keep up to date!

Final Exam

- The final exam will be held during the exam period - December 5 until December 20. Saturdays are included in the exam schedule.
- It will cover the entire syllabus for the course.
- If the exam is scheduled - you can find it [here](#).
- We remind you that it is your responsibility to get to the correct exam at the correct location at the correct time. Check and recheck your exam times and places.
- You should not plan any travel until the date of your exams are known.
- We will not organize a special exam for you just because the flight you booked leaves before the exam.
- See "Course policies" below about what to do if you are unable to attend the final exam.

Missed quizzes

- If a student misses a quiz, that student shall provide a documented excuse otherwise a mark of zero will be entered for that quiz.
- Examples of valid excuses are an illness which has been documented by a physician and Student Health Services, or an absence to play a varsity sport (your coach will provide you with a letter).
- A physician's note must specifically state that the student was medically unfit to write the missed assessment on the date of the exam. Absence of this exact information will result in a mark of 0.
- Your instructor should be notified within 48 hours of such an absence and appropriate documentation should be produced within 7 days. Failure to comply with these time limits will result in a mark of zero.
- It is possible that if you are ill or absent (with proper documentation as above) your instructor may, at their discretion, arrange for you to take a quiz in another section - if your quiz is on a Thursday it may be possible to sit on a Friday in a different section (and vice versa).
- Otherwise there will be no make-up quizzes, and the weight of the missed quiz will be transferred to the final examination.
- Finally - Please note that a student may NOT have 100% of their assessment based on the final examination. A student who has not completed a substantial portion of the term work normally shall not be admitted to the final examination.

Missed final exam

- You will need to present your situation to your faculty’s Advising Office to be considered for a deferred exam.
• See the Calendar for [detailed regulations](#).
• Your performance in a course up to the exam is taken into consideration in granting a deferred exam status (for instance, failing badly normally means you will not be granted a deferred exam).
• For deferred exams in mathematics, students generally sit the next available exam for the course they are taking, which could be several months after the original exam was scheduled.

**Course outline**

• All sections of Math 100 cover the topics listed below.
• A "week" represents *approximately* 150 minutes of class time, not necessarily a calendar week.
• Also see the [learning objectives](#).
• The columns below correspond to sections of different texts
  - Your primary text
    - [CLP textbook](#) and [CLP problem book](#) by Feldman, Rechnitzer and Yeager.
  - Secondary suggested texts
    - Mooculus by Fowler and Snapp
    - APEX Calculus by Hartman et al
    - Active Calculus by Boelkins, Austin and Schlicker
  - A text that was used previously for this course (you do not have to buy this, but it is a perfectly good text)
    - Stewart Calculus 7th edition (though any edition that includes single variable calculus will do)

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<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>CLP Text</th>
<th>Active Calculus</th>
<th>Apex Calculus</th>
<th>Mooculus</th>
<th>Stewart</th>
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<tr>
<td>1</td>
<td>Tangents and velocity</td>
<td>1.1-1.4</td>
<td>1.1-1.2</td>
<td>1.1 &amp; 1.3-1.4</td>
<td>1.1-1.3</td>
<td>2.1-2.3</td>
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<tr>
<td>2</td>
<td>Limits at infinity/Continuity</td>
<td>1.5-1.6 &amp; 2.1-2.3</td>
<td>1.7 2.8</td>
<td>1.5-1.6 &amp; 2.1-2.2</td>
<td>2.1-2.3 &amp; 3.1</td>
<td>2.5-2.7</td>
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<td>3</td>
<td>A second look at derivatives</td>
<td>2.3-2.4 &amp; 2.6-2.7</td>
<td>1.4, 2.1, 2.3</td>
<td>2.3-2.4</td>
<td>3.1-3.2 &amp; 5.1-5.2</td>
<td>2.8 &amp; 3.1-3.2</td>
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<tr>
<td>4</td>
<td>Derivatives of trig functions</td>
<td>2.8-2.9 &amp; 0.6</td>
<td>2.2,2.4-2.6</td>
<td>2.3-2.4</td>
<td>7.1 &amp; 6.1 &amp; 0.2</td>
<td>3.3-3.4 &amp; 1.6</td>
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<tr>
<td>5</td>
<td>Logarithms and their derivatives</td>
<td>2.10-2.12</td>
<td>2.6-2.7</td>
<td>2.6-2.7</td>
<td>6.2-6.3 &amp; 7.2</td>
<td>3.5-3.6</td>
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<td>6</td>
<td>Rates of change/ Exponential growth</td>
<td>3.1 3.3</td>
<td>3.5 1.8</td>
<td>4.2 4.4</td>
<td>8.3 &amp; 10.1 no Taylor</td>
<td>3.9-3.10 no Taylor</td>
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<tr>
<td>7</td>
<td>Related rates/ Linear</td>
<td>3.2 3.4</td>
<td>3.5 1.8</td>
<td>4.2 4.4</td>
<td>8.3 &amp; 10.1 no Taylor</td>
<td>3.9-3.10 no Taylor</td>
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Piazza

- **Piazza** is a message board where students can go online and post questions that your fellow students can answer.
- It is not a required part of the course - but you may find it helpful.
- If you wish to sign up then you do so through **UBC connect** - there will be a link your maths course page.
- After you have signed up, you can log in **HERE**

Very useful links

- **UBC Connect** - not used much for our course, but you can see your quiz grades there and also use it to sign up for **piazza**.
- **Course Outline** - list of topics covered each week.
- **Learning Objectives** [8 page PDF]
- **WebWorK** - online homework system you will get to know well. [Find MATH100-ALL_2017W1]
- **Course sections and websites**
- **CLP text book** - your primary textbook for the course.
- **CLP problem book** you should do plenty of these questions each week (you do not hand them in).
- **Access and diversity** - if you require assistance from A&D, such as registering for assistance with assessment, we suggest you approach them as soon as possible.
- **Old exams** - hosted on the Mathematics Department website.
- **A wiki of old exams** - developed by mathematics graduate students.
- Please look at the Appendix in the **CLP textbook** on high school trigonometry and geometry (areas and volumes) that we expect you to know. The appendix is divided into 3 sections:
  - What you should know,
  - What you should be able to derive, and
  - What you don't need to know but might find interesting.