Math 103 - Integral Calculus with Applications to the Life Sciences

Course Overview

This course in integral calculus complements technical content with applications and examples drawn primarily from life sciences. The course starts by calculating areas and approximating the area using thin stripes as an introduction to Riemannian sums, which then lead to the *Fundamental Theorem of Calculus*. Applications of integration include determining the center of mass, calculating volumes and lengths of curves. After introducing different techniques of integration further applications are discussed in the context of continuous probability distributions as well as differential equations. After an exploration of series and sequences the course ends with an introduction to Taylor polynomials.

Important Dates

Term start: Wednesday, January 2, 2013
Midterm break: February 18-22, 2013
Term end: Friday, April 5, 2013
Family day: Monday, February 11, 2013, no classes
Good Friday: Friday, March 29, 2013, no classes
Easter Monday: Monday, April 1, 2013, no classes

Midterm 1: Monday, February 4th, 2013, 6-7pm
Midterm 2: Thursday, March 7th, 2013, 6-7pm
Final exam: TBA

Schedule

Week	Topic	Notes
Jan. 2-4	Areas and simple sums	
Jan. 7-11	Areas and Riemannian sums	
Jan. 14-18	The Fundamental Theorem of Calculus	
Jan. 21-25	Applications of the definite integral	
Jan. 28-Feb. 1	Volumes and Length	
Feb. 4-8	Techniques of Integration	
Feb. 11-15	Techniques of Integration	Family day
Feb. 18-22		Midterm break
Feb. 25-March 1	Continuous probability distributions	
March 4-8	Differential Equations	
March 11-15	Sequences and Series	

March 18-22	Improper Integrals	
March 25-29	Taylor polynomials	Good Friday
April 1-5	Review	Easter Monday

WebWork

Every week (with a few exceptions), an online WebWork assignment will be assigned for completion. The website can be found here.

Labs

All information will be posted here.

Course Notes

The course notes, written by Leah Keshet, can be found here. The current version has been sent to 'copies smart' in the university village for purchase - in previous years they offered copies that included all the problem sets for about $18.

Problem Sets

Problem sets relating to the above course notes can be found here.

Sections

201 - Christoph Hauert

203 - Christoph Hauert

206 - Carmen Bruni

207 - Wes Maciejewski

208 - Pooya Ronagh

209 - Dong Quan Nguyen

Grading

Your grade for the course is computed according to the following break down:

Homework: 10% (WeBWorK)
Labs: 10% (5% WeBWorK, 5% paper)

Midterms: 30%
Final Exam: 50%

In addition, top contributors on the online forum are rewarded. The top three contributors will receive a voucher for the UBC bookstore or a sweet treat, TBA. Moreover, the forum contributions of the top 10% will be taken into consideration for rounding up their final grades.

Important Notes

- Passing mark is 50%. In addition, at least 40% are needed in the final exam and at least one of the two midterms or the final must be passed.
- There are no make-up midterms; if you miss a midterm for a legitimate reason (e.g. illness, with a doctor's note, conflict with UBC classes), allowances will be made.
- If all homework assignments are handed in, the worst mark will not count.
- All marks may be subject to scaling.

Policies

Homework

Homework will not be marked if

- unreadable (no attempts are made at deciphering messy work)
- not submitted on clean sheets of paper (no scrap paper, pages torn out of a ring binder, etc.)
- the homework spans multiple pages the pages must be stapled (no paper-clips, folded corners, sticky tape, glue, etc.)

For full marks all work must be shown.

Exams

- Calculators are not allowed on midterms and final exam.
- Student ID's are required and will be checked on midterms as well as the final exam.