MATH 103 - Integral Calculus with Applications to 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.

See the UBC Calendar entry for Math 103 for course prerequisites.

Course Schedule

Week	Topic	Notes
Jan. 5-9	Areas and simple sums	
Jan. 12-16	Areas and Riemannian sums	
Jan. 19-23	The Fundamental Theorem of Calculus	
Jan. 26-30	Applications of the definite integral	
Feb. 2-6	Volumes and Length	
Feb. 9-13	Techniques of Integration	Family day
Feb. 16-20		Midterm break
Feb. 23-27	Techniques of Integration, Improper Integrals	
March 2-6	Continuous probability distributions	
March 9-13	Differential Equations	
March 16-20	Sequences	
March 23-27	Series	
March 30-April 3	Taylor polynomials	Good Friday
April 6-10	Review	Easter Monday

Grading Scheme

For excellent background information on grading at the university level see the perspectives provided by Prof. Mark McLean.

Final Exam	50%
Midterm 1	15%
Midterm 2	15%
WeBWorK	10%
Labs	5%
OSH	5%

Note: In order to pass the course a minimum mark of 42% on the final exam is required and you must pass (>=50%) at least on one of the two midterms or the final exam.

Note: For your WeBWorK portion, only the top 90% of problems count towards your final grade. For example, if you solve 90 out of 100 problems correctly, you will receive a perfect grade on the WeBWorK portion. This only includes the WeBWorK portion of your grade and **not** the lab portion (so you must answer all lab questions to receive a perfect grade for this component).

Labs: Labs are purely WeBWorK based but will require the use of a spreadsheet application. Links to the labs are posted on the homework page. Solutions are entered into WeBWorK. No hardcopies need to be handed in.