MAT235Y1: Multivariable Calculus

LEC 0201

About me

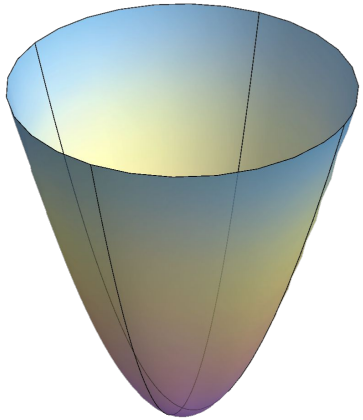
- Marielle Ong (they/them)
- Postdoctoral Fellow in math
- Email: marielle.ong@utoronto.ca
- Course admin email: admin235@math.toronto.edu

- Office Hours: start in the week of **Sept 8th (Venue: TBD)**
  - Tues/Thurs: 11am-12pm

Zoom: : https://utoronto.zoom.us/j/89828531398

Free to talk after lecture. Happy to meet by appointment as well!

Course Topics:



Fall term:

- Multivariable functions, graphs and surfaces, partial derivatives, optimization, vectors

Winter term:

- Integration of multivariable functions, vector fields, line integrals, surface integrals, Green's Theorem, Stoke's Theorem

with a sprinkle of real life applications in economics, engineering and physics.

What is this course like?

- Very visual and geometric! Lots of pictures.
- Very procedural! Lots of recipes.
- Very cohesive! Topics build on top of each other. Keep a formula sheet/concept map.
- General breakdown of concepts:
  - Definition/concept
  - What does it do?
  - How to estimate? (if applicable)
  - Computation
- Example:
  - Partial derivative wrt x
  - Measures the rate of change of f in the x-direction.
  - ≈ (Rise in f)/(Run in x)
  - $d/dx\ (x^2y^3) = 2xy^3$
- Major Theorems but no proofs.
- (Spring sem) A tendency to fall behind in content because there's so much new material to digest each week.

Syllabus

Please read the syllabus for all course information and due dates.

• Readings	Ungraded	Almost weekly
• Pre-class assign.	6%	8 (due Tues, 6pm)
• Tutorial quizzes	12%	8 (drop lowest 2)
• Term tests	52%	4 (Oct 17, Nov 28, Feb 6, Mar 13)
• Final exam	30%	1 (Apr 2026)

Tutorials start in the week of **Sept 15th 2025**

Last day to drop: **Feb 16th 2026**

I will post the lecture notes on Quercus after each lecture. Leading up to the term tests, I will post revision sheets with solutions.

Activity #1: Shout out to your major.

Activity #2: “This or that”.

This or that:

Cats

Dogs

This or that:

International

Domestic

This or that:

Outdoors

Indoors

This, this or that:

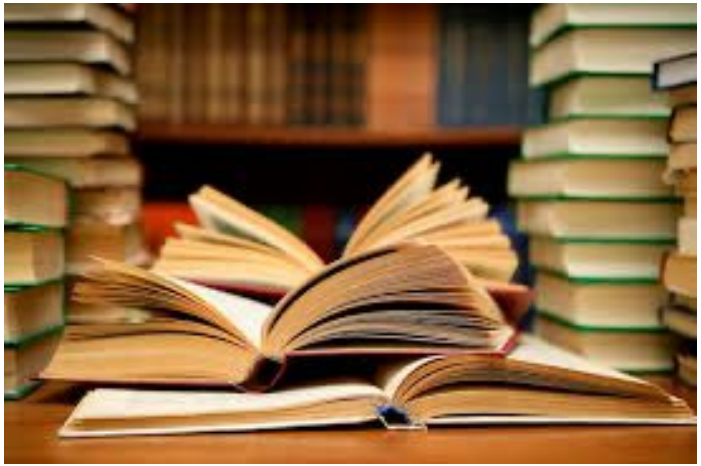
Rice

Pasta/Noodles

Bread/wraps

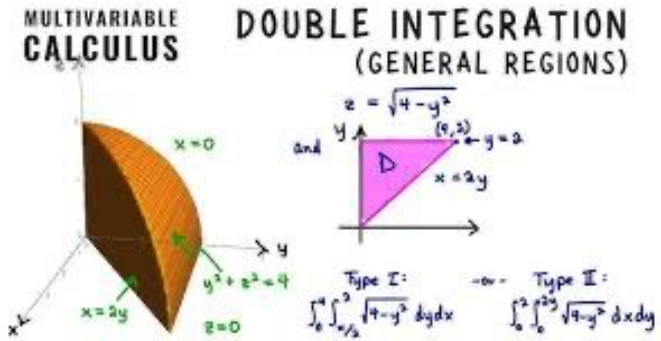
This or that:

Unlimited Creativity



Unlimited Knowledge

This or that:



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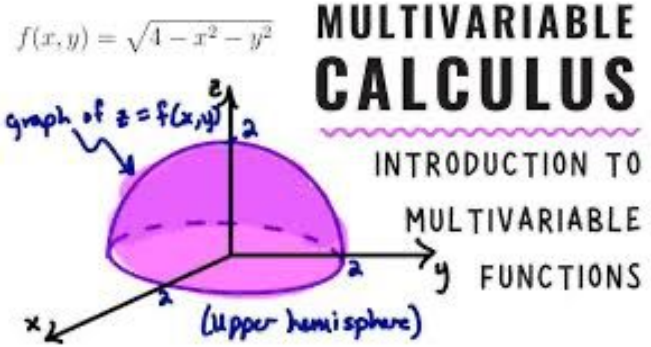

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Math worries & concerns

- Worried about getting good grades
- Dealing with something you don’t understand
- Making mistakes
- Fear of failure
- Exam stress
- Imposter syndrome
- “You need to be talented or a genius to do math”.

Struggle is normal. It’s okay to make mistakes. Math is for everyone.

Math involves and builds many skills!

- Critical thinking
- Generalization/abstraction
- Extrapolation
- Discovery
- Courage to be in unfamiliar place
- Communication
- Theoretical understanding
- Visualization
- Patience
- Dedication
- Teamwork/collaboration
- Carefulness
- Perseverance
- Curiosity
- Hard work (Practise makes perfect!)
- Organization

Class norms

- Please do not be afraid to ask for help!
  - Talk, Email, Appointments, Office Hours, Tutorials
  - Recognized Study Groups, Mathematical Support Initiative
- Please ask questions! There are no stupid questions.
- Please be respectful when listening to others. This is an inclusive learning space.
- Participate actively. Learning is best done when you personally engage in the course.
- Math isn’t easy. We’re all in this together! :D

YOU CAN DO THIS!