Land Acknowledgement

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the Musqueam. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on culture, history, and traditions from one generation to the next. I encourage you to learn more at UBC's Indigenous Portal, `http://indigenous.ubc.ca`, and on the Musqueam's website, `http://musqueam.bc.ca`.

Who am I?

- **My name:** Laurent MacKay (he/him/his)
- **Position:** Postdoctoral Research Fellow
  - **My research:** Mathematical Biology (applied differential equations)
- **Office (student) hours:** TBD:
  `https://www.when2meet.com/?22890274-2QF6r`
- **Contact:** Canvas messaging system or email:
  `mailto:lmackay@math.ubc.ca`

Who are you?

- Primarily Engineering Undergrads...
  - Computer?
  - Electrical?
  - Chemical and Biological?
  - Civil?
  - Environmental?
  - Other?

What will we learn?

Analytical methods for solving Differential Equations (DEs) and some example applications (mass-spring systems, circuits, heating/cooling, etc.)

- Ordinary Differential Equations (ODEs) - one independent variable
  - Fancy Integration (separable equations, method of integrating factors)
  - Educated Guessing (ansatz method, method of undetermined coeffs.)
  - Laplace Transforms
  - Fourier Series (periodic solutions)
- Partial Differential Equations (PDEs) - multiple independent variables
  - Heat/Diffusion Equation, Wave Equation, Laplace Equation

Course Structure

Every week:

- Attend class!
  - I'll do some exercises, you do others with neighbours (bring something to write with)
  - Asking questions is encouraged
  - Skeleton and annotated lecture notes are posted on Canvas
  - Lecture recordings are also posted within 24 hours
- Attend office hours as needed (will be near the math dept.)
  - Scheduling Poll: `https://www.when2meet.com/?22890274-2QF6r`
- Check **Canvas** for important announcements and **Piazza** for student-led discussion (WebWork, Assignments, etc.)

MATH 256: Grade Breakdown

- 10% WebWork - 7 Total
  - First one due Jan. 18th
- 10% 2 Written HW Assignments
  - Due dates: TBD
  - Submitted via: **Gradescope**
- 30% 2 Midterms
  - Weeks of Feb. 5th and March 11th
  - One page (front & back) of notes is permitted.
- 50% Final Exam
  - Do not make travel plans in April...

Textbooks & Resources

- Diffy Qs: Free online text, quite good
  - https://www.jirka.org/diffyqs/html/diffyqs.html
- Paul's Online Math Notes
  - https://tutorial.math.lamar.edu/classes/de/de.aspx
  - Excellent free resource, better solutions than Diffy Qs.
- Boyce and Diprima: Optional Hardcopy, also good
  - https://www.google.com/search?q=boyce+and+diprima+elementary+differential+equations+and+boundary+value+problems