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Chapter 1

Tues Sept 12: Syllabus

1.1 Instructor Information

Instructor: Dr. Amy Hurford

Office: Teaching remotely

Email: ahurford@mun.ca

WebEx: <https://mun.webex.com/meet/ahurford>

Course website: <https://ahurford.github.io/math-4190/>

Availability: I will try to reply to emails within 24 hours (excluding evenings, weekends and holidays). I am always available during the lecture times. Please email to request a meeting for a different time. Please check my schedule and suggest a time I am free that works for you.

1.2 Course Information

TR 2-3.15pm meet on WebEx

Course description:

MATH 4190 Mathematical Modelling is intended to develop students' skills in mathematical modelling and competence in oral and written presentations. Case studies in modelling will be analyzed. Students will develop a mathematical model and present it in both oral and report form.

Course format:

For the first 7 weeks of class, each week you will have an assignment to complete. There will not be lectures, but there may be required readings (ideally to be completed before class). For the next 5 weeks, during class time you should work on your final project. During the last week of class each student will do

an oral presentation of their final project. During classtime, I will be available on WebEx to help you with your assignments, to answer your questions, or to advise you regarding your final project. If you are not able to make it to class, but require help, please email me to set up an appointment.

Course expectations:

Any students that are disruptive, violating university policies, or acting in a potentially unsafe way will be warned and asked to leave.

Learning goals:

This course will teach you how to derive, parameterize, and interpret your own mathematical models with an emphasis on ‘hands-on’ modelling experience.

Required Text and Resources:

The ebook at <https://ahurford.github.io/math-4190/> is the text for the course. This ebook will refer you to any other readings that will be either publically available or available via the MUN library. Class announcements and submission of your assignments will occur through BrightSpace.

1.3 Method of Evaluation

- 6 assignments (equal weighting) - 35%
- Oral presentation - 15% (week of April 5)
- Final Project (due Monday April 12 at 9am) - 50%

Late assignments, labs, and missed midterms, and final exams will be accommodated as described by University Regulation 6.7.3 and 6.7.5 (see <https://www.mun.ca/regoff/calendar/sectionNo=REGS-0474> for Regulations).

1.4 Additional Policies

1.4.1 Accommodation of students with disabilities

Memorial University of Newfoundland is committed to supporting inclusive education based on the principles of equity, accessibility and collaboration. Accommodations are provided within the scope of the University Policies for the Accommodations for Students with Disabilities see www.mun.ca/policy/site/policy.php?id=239. Students who may need an academic accommodation are asked to initiate the request with the Glenn Roy Blundon Centre at the earliest opportunity (see www.mun.ca/blundon for more information).

1.4.2 Academic misconduct

Students are expected to adhere to those principles, which constitute proper academic conduct. A student has the responsibility to know which actions, as described under Academic Offences in the University Regulations, could be construed as dishonest or improper. Students found guilty of an academic offence may be subject to a number of penalties commensurate with the offence including reprimand, reduction of grade, probation, suspension or expulsion from the University. For more information regarding this policy, students should refer to University Regulation 6.12.

1.4.3 Equity and Diversity

A safe learning environment will be provided for all students regardless of race, colour, nationality, ethnic origin, social origin, religious creed, religion, age, disability, disfigurement, sex (including pregnancy), sexual orientation, gender identity, gender expression, marital status, family status, source of income or political opinion.

You should not photograph or record myself, teaching assistants, or other students in the class without first obtaining permission. Accommodation will be made for students with special needs.

The sound should be turned off on phones and computers during class.

1.5 Additional Supports

Resources for additional support can be found at:

- www.mun.ca/currentstudents/student/
- <https://munsu.ca/resource-centres/>

1.6 Tentative course schedule

The course schedule is found in the toolbar of the class materials, see <https://ahurford.github.io/math-4190/>.

The last day to drop the course without academic prejudice is Monday March 8.

Chapter 2

Quantitative skills laboratory

PURPOSE

1. To learn how to record data in electronic format
 2. To learn how to write hypotheses as equations
 3. To learn how to choose the appropriate visualizations
 4. To learn how to make graphs using R Studio
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Before coming to the laboratory:

1. If you have not already, install **R** and **RStudio**.
2. Before coming to the laboratory read:
 - Introduction to R
 - Making graphs in R
 - Entering and loading data

EXERCISE 1. Data entry and graphing with a continuous independent variable