From the calendar:
Statistical Computing (Honours)
Statistical computing techniques, pseudo-random number generation, tests for randomness, numerical algorithms in statistics; optimization techniques; environments for data analysis, efficient programming techniques; statistics with mainstream software.

Includes: Experiential Learning Activity

Prerequisite(s): STAT 3553 or STAT 3503 or permission of the School.
Lectures three hours a week, laboratory one hour a week.

Lectures will be at least somewhat synchronous, students are expected to be online during class time.

Instructor
Dr. Dave Campbell,
Professor
School of Mathematics and Statistics

Tentative Marking Scheme:
Assignments 30%
Weekly in-class quizzes: 20%
In class tests: 20%
Final Project: 30%
There will not be a final exam

Textbook:
Grolemund and Wickham, (2016) “R for Data Science”
https://r4ds.had.co.nz

Fall term is unusual at Carleton, See the University plan for the term:
https://students.carleton.ca/2020/05/plans-for-the-fall-2020-term-timetable-and-scheduling-tool-will-open-on-june-8/

Schedule:
Wednesdays and Fridays 4:05-5:25pm. See the course page on culearn.carleton.ca for class login details and resources.

Office Hours:
Immediately before class Wednesdays and Fridays. Other times are possible to accommodate student schedules and different time zones.
For best results, use culearn to contact the instructor.

Software:
R: https://muug.ca/mirror/cran/ (install R first)
Rstudio: https://rstudio.com/products/rstudio/ (install this after you have installed R)
Approximate course outline;

Week 1-3:
R for Data Science Chapter 1-5
ggplot, dplyr, intro to tidyverse, exploratory data analysis

Week 4:
Chapter 21
RMarkdown and reproducible workflows.

Week 5-7:
Chapter 7-9
tidyverse, wrangling diverse data types

Week 8-9:
Data acquisition and cleaning, scraping data tables from html,
Regular expressions, stringr

Week 10:
Permutation tests
Bootstrap

Week 11:
For loops, parallel for loops, and avoiding for loops

Week 12:
Maximum likelihood estimation

Week 13:
Optimization techniques