uOttawa

Department of Mathematics and Statistics

MAT4376E Topics in Statistics
MAT5314E Topics in Probability and Statistics

Techniques of Data Analysis | Fall 2022 | Instructor: P. Boily

In October 2012, the *Harvard Business Review* published an article calling data science the **sexiest job of the 21st century**, a long cry from the business-as-usual practice of data geeks playing a supporting role in organizations. Today's data scientists are not just number-crunchers – as a combination of **data hacker**, **analyst**, **communicator**, and **trusted adviser**, they discover meaningful relationships in ever-growing masses of information, and play a leading role in the decision-making processes.

In **groups**, you will apply specific data analysis tasks and investigate real-world datasets through the "Multiple I's" framework.

PRE-REQUISITES

Programming proficiency (R/Python/Matlab/etc.); MAT2122, MAT2141, MAT2371, MAT2375 or MAT2377, and MAT3375 (or permission).

COURSE SCHEDULE

LEC: MON 08:30-10:00 (MRT 221)
LEC: WED 13:00-14:30 (MRT 221)
OFF: by appointment (ZOOM, SLACK)

DELIVERABLES

Projects:
1) Data Visualization, 07-Oct
2) Bayesian Data Analysis, 28-Oct
3) Queueing Systems, 18-Nov
4) Anomaly Detection & Outlier Analysis, 09-Dec
5) Graduate Project, 16-Dec

4376E: only projects 1-4 must be completed; project 3 may be replaced by another project, with topics to be approved by 28-Oct.

5314E: all projects have to be completed. Graduate project topics must be approved by 24-Sep.

All projects are weighed equally.

NOTES

Initiative and **independence** (and the other "multiple I's") are rewarded: projects which stay solely within the suggested guidelines can score at most a B+.

Engagement is mandatory in this course. Students who do not participate in at least 60% of the sessions will be docked 10 marks.

EXPECTATIONS

You are expected to spend 8-10 hours [43756E] or 12-15 hours [5314E] per week on this course.

Teamwork is crucial to insightful data analysis; in this course, all projects are done in teams of 3 or 4 (which can change from one project to another). Be advised that a grade is given to the whole group (independently of the quantity and quality of the work performed by each person).

You may need to use methods or concepts that have not been discussed in the lectures. More details will be provided in class.

One objective is to learn to navigate tight deadlines, and to plan your analysis/reporting accordingly (**12 page limit, no exception**). Do not wait before starting work on your projects.

There may be times when you are unable to deliver the projects by the deadline due to reasons outside your control. You are requested to inform me (and to submit the work you have already completed) as soon as you become aware of such a situation (within reason) so that we can discuss alternatives.

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