## DATA5000: Introduction to Data Science

## Fall 2024

# School of Computer Science Carleton University

## Description

The course covers topics relevant to data science: working with data, exploratory data analysis, data mining, machine learning. The concepts are illustrated using the R language. Students also receive hands-on tutorials (e.g., IBM Cognos Analytics, Tableau). Students will be evaluated by their course projects. The course will be lecture-based and will also offer some hands-on tutorials. The project component will be flexible and will involve data collection, manipulation, and analysis.

The project forms an integral part of this course. The project is to be completed in group of two students on the topic of the data science and analytics. The main goal for students is to learn how to work on a multidisciplinary team (Computer Science, Systems and Computer Engineering, Information Technology, Mathematics and Statistics).

### Class Schedule

Lectures are held every Thursday from 10:05 AM to 12:55 PM via Zoom.

There will be no classes on October 10 (I am away to a conference) and October 24 (Fall break).

Discord server will be used for course communication, news, and reminders. Please join the server

here: https://discord.gg/46vz2qeRvE.

Schedule of seminars is posted on the course website.

Fall break: October 21–25, 2024 (no class).

## Course Website

http://olgabaysal.com/teaching/fall24/data5000\_f24.html

## Instructor

Dr. Olga Baysal

Email: olga.baysal@carleton.ca

Office Hours: via Zoom by appointment only

Website: http://olgabaysal.com/

#### Course Schedule

- Thursday September 5 Lecture 1: What is Data Science?/ Introduction to R.
- Thursday September 12 Lecture 2: Working with Data.
- Thursday September 19 Project proposal presentations.
- Thursday September 26 Lecture 3: Visualization and Exploration.
- Thursday October 4 Lecture 4: Data Mining and Machine Learning I.
- Thursday October 10 No class (I am away to a conference).
- Thursday October 17 Lecture 5: Machine Learning II.

- Thursday October 24 No class (Fall break).
- Thursday October 31 Tutorial OR guest lectures.
- Thursday November 7 Paper presentations.
- Thursday November 14 Tutorial OR guest lectures.
- Thursday November 21 Tutorial OR guest lectures.
- Thursday November 28 Tutorial OR guest lectures.
- Thursday December 5 Project presentations.

#### **Evaluation**

- Project proposal presentation: 15% (September 19)
- Project proposal: 10% (due September 19, 11:59 PM)
- Paper selection: 0% (due October 17, 11:59 PM)
- Paper presentation: 15% (November 7)
- Project presentation: 10% (December 5)
- Project report: 50% (due December 12, 11:59 PM)

## University Policies

For information about Carleton's academic year, including registration and withdrawal dates, see Carleton's Academic Calendar.

#### **Academic Accommodations**

Carleton is committed to providing academic accessibility for all individuals. Please review the academic accommodation available to students here: https://students.carleton.ca/course-outline/.

## **Academic Integrity**

Student Academic Integrity Policy. Every student should be familiar with the Carleton University Student Academic Integrity policy. A student found in violation of academic integrity standards may be sanctioned with penalties which range from a reprimand to receiving a grade of F in the course, or even being suspended or expelled from the University. Examples of punishable offences include plagiarism and unauthorized collaboration. Any such reported offences will be reviewed by the office of the Dean of Science.

The use of any AI system will be considered academic misconduct. This includes, but is not limited to, chatbots or code generators (e.g., ChatGPT) for projects (reports, models, etc.). An exception to the above rule is made for automated grammar and punctuation checking tools (such as Grammarly).

More information on this policy may be found on the ODS Academic Integrity page: https://science.carleton.ca/students/academic-integrity/.

### Plagiarism

As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science. More information and standard sanction guidelines can be found here: https://science.carleton.ca/students/academic-integrity/. Please note that content generated by an unauthorized A.I.-based tool is considered plagiarized material.

## **Unauthorized Collaboration**

Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis".