



### **Land Acknowledgement**

We respectfully acknowledge the Syilx Okanagan Nation and their peoples, in whose traditional, ancestral, unceded territory UBC Okanagan is situated.

## **DATA 301: Introduction to Data Analytics**

**Faculty:** Irving K. Barber Faculty of Science

**Department:** Computer Science, Mathematics, Physics, and Statistics

**Instructor(s):** Dr. Firas Moosvi

**Instructor(s) Email:** [firas.moosvi@ubc.ca](mailto:firas.moosvi@ubc.ca)

**Duration:** Term 2 Winter 2022

**Delivery Modality:** In-Person

**Course Location:** EME 0050

**Course Days:** Mon/Wed/Fri

**Class Hours:** 10:00 - 11:00

**Office hours:** My student hours are from Monday 11 AM - 12 PM in EME 0050 and Fridays 1 PM - 2 PM via Zoom.

### **Course Description**

DATA 301 (3) Introduction to Data Analytics

- Techniques for computation, analysis, and visualization of data using software.
- Manipulation of small and large data sets.
- Automation using scripting.
- Real-world applications from life sciences, physical sciences, economics, engineering, or psychology.
- No prior computing background is required.

Credit will be granted for only one of COSC 301, DATA 301 or DATA 501. [3-2-0]

Prerequisite: Either (a) third-year standing, or (b) one of COSC 111 or COSC 122

Equivalency: COSC 301.

### **Course Format**

In-Person

### **Course Overview, Content and Objectives**

This course is one of my favourite courses to teach at UBCO! It was initially created by Dr. Ramon Lawrence, and has since been updated by various folks including Dr. Patricia Lasserre, Dr. Firas Moosvi, Dr. Irene Vrbik, Dr. Scott Fazackerley, and others. It is a fantastic introduction to the field of Data Science and in this one course, you will be equipped to handle most of the common Data wrangling, processing, and analysis tasks. You will also be introduced to

a variety of tools (tech stack) that are common in the industry, and we hope you use this course as a spring board to launch your interest in Data Science!

Come for the data, stay for the fun! In this course you will be able to explore datasets that are of interest to you and also do some common processing tasks towards a data analysis.

### **Learning Outcomes**

*Upon successful completion of this course, students will be able to...*

The learning intentions for this course are to:

1. Understand data representation formats and techniques and how to use them.
2. Work with large datasets and learn to manipulate them programmatically.
3. Experience using a wide-range of data analytics tools including Excel, Git, Python, Pandas, Tableau, and other visualization packages and software.
4. Develop a computational thinking approach to problem-solving and use programs to solve data tasks.

### **Assessments of Learning**

Learning Logs - 10%

Labs - 30%

Project - 25%

Tests - 20%

Final Exam - 15%

The use of artificial intelligence (AI) assistance - including tools such as ChatGPT - for any assessed portions of this course is not permitted.

### **Course schedule**

**See course website for details of the schedule of topics**

### **Late policy**

- 48 hour grace-period on all due dates and deadlines except Tests.
- Classes are recorded, but not live streamed. Recordings are available 24-48 hours after the class.

### **Missed exam policy**

- For each of the tests, there will be a bonus test one week later and the better score of the Test-Bonus Test pair will be taken.

### **Missed Activity Policy:**

- Best 10 of 11 labs and learning logs will be considered for the final grade

### **Passing/Grading Criteria**

- All students must satisfy ALL conditions to pass the course:

1. Obtain an average grade of at least 50% on the Labs,
2. Obtain an average grade of at least 50% on the Test and Exam components together,
3. Obtain a grade of at least 50% on the course Project,
4. Obtain an average grade of at least 40% on the Final Exam,
5. Obtain a grade of at least 50% on the whole course.

## **Learning Materials**

Course materials will be provided on the course website: [https://firas.moosvi.com/courses/data301/2022\\_WT2](https://firas.moosvi.com/courses/data301/2022_WT2).

## **Other Course Policies**

### **Academic Integrity**

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. **For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course.** Careful records are kept to monitor and prevent recidivism.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar at: <http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,54,111,0>

### **Final Examinations**

You can find the [Senate-approved term and examination dates here](#). Except in the case of examination clashes and hardships (three or more formal examinations scheduled within a 27-hour period) or unforeseen events, students will be permitted to apply for out-of-time final examinations only if they are representing the University, the province, or the country in a competition or performance; serving in the Canadian military; observing a religious rite; working to support themselves or their family; or caring for a family member. Unforeseen events include (but may not be limited to) the following: ill health or other personal challenges that arise during a term and changes in the requirements of an ongoing job.

Further information on Academic Concession can be found under Policies and Regulation in the Okanagan Academic Calendar <http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0>

### **Grading Practices**

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record.

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014>

## **Resources to Support Student Success:**

### **UBC Okanagan Disability Resource Centre**

The DRC facilitates disability-related accommodations and programming initiatives to remove barriers for students with disabilities and ongoing medical conditions. If you require academic accommodations to achieve the objectives of a course please contact the DRC at:

**UNC 215** 250.807.8053

Email: [drc.questions@ubc.ca](mailto:drc.questions@ubc.ca)

Web: [www.students.ok.ubc.ca/drc](http://www.students.ok.ubc.ca/drc)

### **UBC Okanagan Equity and Inclusion Office**

Through leadership, vision, and collaborative action, the Equity & Inclusion Office (EIO) develops action strategies in support of efforts to embed equity and inclusion in the daily operations across the campus. The EIO provides education and training from cultivating respectful, inclusive spaces and communities to understanding unconscious/implicit bias and its operation within campus environments. UBC Policy 3 prohibits discrimination and harassment on the basis of BC's Human Rights Code. If you require assistance related to an issue of equity, educational programs, discrimination or harassment please contact the EIO.

**UNC 325H** 250.807.9291

Email: [equity.ubco@ubc.ca](mailto:equity.ubco@ubc.ca)

Web: [www.equity.ok.ubc.ca](http://www.equity.ok.ubc.ca)

### **Student Wellness**

At UBC Okanagan health services to students are provided by Student Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Student Wellness for more information or to book an appointment.

**UNC 337** 250.807.9270

Email: [healthwellness.okanagan@ubc.ca](mailto:healthwellness.okanagan@ubc.ca)

Web: [www.students.ok.ubc.ca/health-wellness](http://www.students.ok.ubc.ca/health-wellness)

### **Office of the Ombudperson**

The Office of the Ombudperson for Students is an independent, confidential and impartial resource to ensure students are treated fairly. The Ombuds Office helps students navigate campus-related fairness concerns. They work with UBC community members individually and at the systemic level to ensure students are treated fairly and can learn, work and live in a fair, equitable and respectful environment. Ombuds helps students gain clarity on UBC policies and procedures, explore options, identify next steps, recommend resources, plan strategies and receive objective feedback to promote constructive problem solving. If you require assistance, please feel free to reach out for more information or to arrange an appointment.

**UNC 328** 250.807.9818

Email: [ombuds.office.ok@ubc.ca](mailto:ombuds.office.ok@ubc.ca)

Web: [www.ombudsoffice.ubc.ca](http://www.ombudsoffice.ubc.ca)

## **Student Learning Hub**

The Student Learning Hub is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include **tutoring in math, sciences, languages, and writing, as well as help with study skills and learning strategies**. Students are encouraged to visit often and early to build the skills, strategies and behaviors that are essential to being a confident and independent learner. For more information, please visit the Hub's website.

**LIB 237** 250.807.8491

Email: [learning.hub@ubc.ca](mailto:learning.hub@ubc.ca)

Web: [www.students.ok.ubc.ca/slh](http://www.students.ok.ubc.ca/slh)

## **The Global Engagement Office**

The Global Engagement Office provides advising and resources to assist International students in navigating immigration, health insurance, and settlement matters, as well as opportunities for intercultural learning, and resources for Go Global experiences available to all UBC Okanagan students, and more.

Come and see us – we are here to help! You may also contact [geo.ubco@ubc.ca](mailto:geo.ubco@ubc.ca)

## **Safewalk**

*Don't want to walk alone at night? Not too sure how to get somewhere on campus? Call Safewalk at **250-807-8076**.*

*For more information, see: [www.security.ok.ubc.ca](http://www.security.ok.ubc.ca)*

## **Creative Commons Open Copyright License**

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## Department of Computer Science, Mathematics, Physics and Statistics

### Other Important Information

#### **Cooperation vs. Cheating**

Working with others on assignments is a good way to learn the material and we encourage it. However, there are limits to the degree of cooperation that we will permit. Any level of cooperation beyond what is permitted is considered cheating.

When working on programming assignments, you must work only with others whose understanding of the material is approximately equal to yours. In this situation, working together to find a good approach for solving a programming problem is cooperation; listening while someone dictates a solution is cheating. You must limit collaboration to a high-level discussion of solution strategies, and stop short of actually writing down a group answer. Anything that you hand in, whether it is a written problem or a computer program, must be written by you, from scratch, in your own words. If you base your solution on any other written solution, you are cheating. If you provide your solution for others to use, you are also cheating.

#### **Grievances and Complaints Procedures**

A student who has a complaint related to this course should follow the procedures summarized below:

- The student should attempt to resolve the matter with the instructor first. Students may talk first to someone other than the instructor if they do not feel, for whatever reason, that they can directly approach the instructor.

If the complaint is not resolved to the student's satisfaction, the student should e-mail the Associate Head for Computer Science, Dr. Yves Lucet at [yves.lucet@ubc.ca](mailto:yves.lucet@ubc.ca) or the Department Head, Dr. W. John Braun at [cmps.depthead@ubc.ca](mailto:cmps.depthead@ubc.ca).

### Student Services Resources

#### **Sexual Violence Prevention and Response Office (SVPRO)**

A safe and confidential place for UBC students, staff and faculty who have experienced sexual violence regardless of when or where it took place. Just want to talk? We are here to listen and help you explore your options. We can help you find a safe place to stay, explain your reporting options (UBC or police), accompany you to the hospital, or support you with academic accommodations. You have the right to choose what happens next. We support your decision, whatever you decide.

Visit [svpro.ok.ubc.ca](http://svpro.ok.ubc.ca) or call us at 250-807-9640