

### COURSE INFORMATION

Course title:	Data Visualization	Credits:	2.0
Course code:	BAIT 518	Class location:	HA 435
Session and term:	2023/24 W2	Class times:	T/Th 2:00pm – 4:00pm
Section(s):	001		
Course duration:	1/8/2024 - 2/9/2024		
Division:	Marketing & Behavioral Science		

### INSTRUCTOR INFORMATION

Instructor:	Parveen Sarana	Office location:	HA 349
Email:	parveen.sarana@sauder.ubc.ca	Office hours:	TBD

### COURSE DESCRIPTION

This course is designed to focus on data visualization in the real-world. Students will learn data visualization best practices, how to effectively communicate analysis and how to design dashboards for real-world use by business stakeholders.

### COURSE FORMAT

This course consists of a mix of lectures, software tutorials and assignments. The focus throughout the course will be to have interactive learning sessions requiring you to actively participate in and contribute to the class.

### LEARNING OBJECTIVES

By the end of this course, students will be able to:



- Understand the role of communicating data to stakeholders in a real-world context.
- Create effective data visualizations and dashboard tools using software platforms such as Tableau.
- Understand data visualization best practices focused on the principles of visual perceptions and communications.

### ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the x<sup>w</sup>məθk<sup>w</sup>əy̓əm (Musqueam) people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

SUSTAINABLE DEVELOPMENT GOALS (SDGS)

At UBC Sauder, we are committed to responsible business practices that can have transformative impacts on society. One of the ways we are reinforcing our commitment to responsible business is by showcasing relevant content in our courses via the lens of the [United Nations Sustainable Development Goals](#). In this course, we will touch on topics that relate to the following goals:

Sustainable Development Goal	Description of how and when the goal is covered in the course.
<p><b>Goal 10: Reduce Inequality</b></p> 	<p><b><i>Reduce inequality within and among countries.</i></b></p> <p>Data is not immune to bias. In our class, we will use data and examples to examine different types of bias and their representation in data visualizations. Misrepresentative data visualizations can lead to misinterpretation and false information from which decisions are made. We will learn to integrate best practices moving towards a more equal representation of information.</p>
<p><b>Goal 16: Peace, Justice, and Strong Institutions</b></p> 	<p><b><i>Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.</i></b></p> <p>We will use examples of data visualizations used to engage the public in lectures and assignments. We will aim to gain an understanding of how data usage, data communication and visual reporting can play a key role in transparency around public life.</p>

## ASSESSMENTS

### Summary

<u>Component</u>	<u>Weight</u>
In-class Quizzes	25%
Assignments	30%
Final Project (Hackathon)	35%
Class Participation	10%
<b>Total</b>	<b>100%</b>

### Details of Assessments

#### In-class Quizzes – 25%

There will be an in-class quiz at the start of each class. Quizzes will range in content from recall of previous classes, reflections on readings and data visualization reviews. Each quiz will account for approximately 2.5% of the course grade.

#### Assignments – 30%

- **Assignment 1 (individual):** Data Visualization in Public Life – 10%
- **Assignment 2 (individual):** Data Visualization Overhaul – 10%
- **Assignment 3 (group or individual assignment):** Data as a Dashboard – 10%

#### Final Project (Hackathon) – 35%

Students will be provided with a real-world data problem from participating organizations as well as an industry professional to function as their key project stakeholder. Students will iterate through the development of a data visualization product to communicate the organization’s data and create a self-service analytical tool that automates the solution to the stakeholder’s business problem most effectively. Students will be presenting their tools for review and feedback.

The Hackathon will be spread across two days:

- Class 9, February 9<sup>th</sup>  
Project Selection (Randomized group selection, topic assignment, initial stakeholder interviews)
- Class 10, February 10<sup>th</sup>  
Project Final Presentation and project submission

#### Class Participation – 10%

You are expected to actively participate and attend all classes. Class participation is earned through contribution to in-class discussions and participation in interactive class activities. Participation points will be deducted if you are late to the classes.

## LEARNING MATERIALS

### *Reading Materials*

The following materials are optional but highly recommended as references to supplement in class material. Note: All these resources can be found through UBC Library.

- Cole Nussbaumer Knaflic, 2015. [Storytelling with Data: A Data Visualization Guide for Business Professionals](#). Wiley.
- Simit Gupta, 2022. [The Tableau Workshop: A Practical Guide to the Art of Data Visualization with Tableau](#). Packt Publishing, Ltd.

Any additional reading material will be posted on Canvas.

### *Software Tools*

Tableau will be the primary data visualization tool we will use. You are required to install this software for use throughout this course. Download Tableau: <https://www.tableau.com/tft/activation>

\*Note: You can apply and use Tableau for Students prior to class or wait for the first day of the course where a Product key will be given.

## COURSE-SPECIFIC POLICIES AND RESOURCES

### *Missed or late assignments, and regrading of assessments*

Late submissions will not be accepted and will receive a grade of zero. [This is standard for RHL courses.]

### *Academic Concessions*

If extenuating circumstances arise, please contact the RHL Graduate School program office as early as reasonably possible, and submit an [Academic Concession Request & Declaration Form](#). If an academic concession is granted during the course, the student will be provided options by RHL, or by the instructor in consultation with RHL, per [UBC's policy on Academic Concession](#).

### *Code Plagiarism*

Code plagiarism falls under the UBC policy for [Academic Misconduct](#). Students must correctly cite any code that has been authored by someone else or by the student themselves for other assignments.

Cases of "reuse" may include, but are not limited to:

- the reproduction (copying and pasting) of code with none or minimal reformatting (e.g., changing the name of the variables)
- the translation of an algorithm or a script from a language to another
- the generation of code by automatic code-generations software

An "adequate acknowledgement" requires a detailed identification of the (parts of the) code reused and a full citation of the original source code that has been reused.

Students are responsible for ensuring that any work submitted does not constitute plagiarism. Students who are in any doubt as to what constitutes plagiarism should consult their instructor before handing in any assignments.

## POLICIES APPLICABLE TO COURSES IN THE ROBERT H. LEE GRADUATE SCHOOL

### *Attendance*

Excepting extenuating circumstances, students are expected to attend 100% of their scheduled class hours. Absent students limit their own academic potential, and that of their classmates, and cause unnecessary disruption to the learning environment. Students missing more than 20% of the total scheduled class hours for a course (including classes held during the add/drop period) without having received an academic concession will be withdrawn from that course. Withdrawals, depending on timing, could result in a “W” or an “F” standing on the transcript.

### *Punctuality*

Students are expected to arrive for classes and activities on time and fully prepared to engage. Late arrivals may be refused entry at the discretion of the instructor or activity lead. Students arriving later than halfway through a scheduled class will be treated as absent for that class.

### *Electronic Devices*

Devices such as laptops, tablets, and cell phones are not permitted to be used in class unless directed by the instructor for in-class activities. Students who do not follow the School’s policy in this regard may be required to leave the room for the remainder of the class, so that they do not distract others. Research shows that students’ use of laptops in class has negative implications for the learning environment, including reducing their own grades and the grades of those sitting around them.

### *Citation Style*

Please use the American Psychological Association (APA) reference style to cite your sources.

Details of the above policies and other RHL Policies are available at:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,199,506,1625>

## UNIVERSITY POLICIES AND RESOURCES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the UBC Senate website at <https://senate.ubc.ca/policies-resources-support-student-success>.

### *Respect for Equity, Diversity, and Inclusion*

The UBC Sauder School of Business strives to promote an intellectual community that is enhanced by diversity along various dimensions including Indigeneity (including identification as First Nation, Métis, or Inuit), race, ethnicity, gender identity, sexual orientation, religion, political beliefs, social class, and/or disability. It is critical that students from diverse backgrounds and perspectives be valued in and well-served by their courses. Furthermore, the diversity that students bring to the classroom should be viewed as a resource, benefit, and source of strength for your learning experience. It is expected that all students and members of our community conduct themselves with empathy and respect for others.

### *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 may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

### *Use of Artificial Intelligence*

#### **Generative AI Permitted Where Specified With Attribution**

For this course, students may use generative artificial intelligence (AI), including ChatGPT, for specific assessments or coursework, where it is expressly specified by the instructor. In these cases of permitted use, students must disclose any use of AI-generated material as per the assessment guidelines. At a minimum, this will include proper attribution, including in-text citations, quotations, and references. Please see your assessment guidelines for full details.

### **COPYRIGHT**

All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline and could be subject to legal action. Any lecture recordings are for the sole use of the instructor and students enrolled in the class. In no case may the lecture recording or part of the recording be used by students for any other purpose, either personal or commercial. Further, audio or video recording of classes are not permitted without the prior consent of the instructor.

### **COURSE SCHEDULE**

\*Tentative Class schedule. This is subject to change based on learning progress.

\*Note: Reading materials will be referenced on Canvas.

Week	Class	Date	Topic	Due
1	1	Jan 9	Course Introduction Theory of Data Visualization Bias + Effective Data Visualization Practices	Quiz 1
	2	Jan 11	Introduction to Tableau Configuring the Data Environment	Quiz 2
2	3	Jan 16	Visual Analytics	Quiz 3 Data Visualization in Public Life
	4	Jan 18	Advanced Tableau Optimal Visualization Types	Quiz 4
3	5	Jan 23	Spatial Data Visualization	Quiz 5 Data Visualization Overhaul
	6	Jan 25	Dashboard Development	Quiz 6
4	7	Jan 30	Connecting Data/Data Workflows	Quiz 7
	8	Feb 1	Stakeholder Management Product Management in Data Visualization Basic UX Design Principles	Quiz 8 Data as a Dashboard
5	9	Feb 6	Hackathon	Quiz 9
	10	Feb 8	Final Project Presentations	Quiz 10 Final Project Submission