COURSE INFORMATION

Course title:	Data Visualization		
Course code:	BAIT518	Credits:	2
Session and term:	2023W1	Class location:	HA132
Section(s):	BA1, BA2	Class times:	M/T/W/T/F
			9:00-11:00, 1:00-3:00, 3:30-5:30
Course duration:	Oct 23-Oct27	Pre-requisites:	
Division:	Marketing and Behavioural Science	Co-requisites:	

INSTRUCTOR INFORMATION

Instructor:	Dr. Chunhua Wu		
Phone:	604-827-2266	Office location:	HA572
Email:	chunhua.wu@sauder.ubc.ca	Office hours:	Th 11:00-12:00

Teaching assistant: Xilin Song
Office hours:
Email: xilin.song@sauder.ubc.ca

COURSE DESCRIPTION

For every leader in the company, not just for me, there are decisions that can be made by analysis. These are the best kinds of decisions! They are fact-based decisions.

— Jeff Bezos

In this data-centric world, firms are increasingly relying on data-driven analytics in the decision process to stay competitive in the market. A data-driven mindset and solid analytical skills have become essential for today's managers.

Humans are inherently visual beings. The first step towards data-driven decision making is the ability to "see" the data. Effective data visualization allows managers to grasp business operations, identify business problems, seize market opportunities, and enhance business performance.

Data visualization encompasses the acquisition, organization, exploration, and presentation of data in a visually appealing and effective manner. It is not merely the databases, software tools, statistics, tables, and graphics; at its core, it is a mode of communication that fulfill specific objectives and generate meaningful impacts.

This course delves into pivotal data visualization topics in business. Throughout the course, we review data, statistics, economics, and visualization concepts; practice software tools; and more importantly, navigate the purpose-driven aspect of data visualization. By the end of the course, students will be adept at creating impactful data visualizations for business.

COURSE FORMAT

The course consists of a mix of lectures, pre-recorded videos, software tutorials, assignments, and invited guest sessions. All class sessions will be interactive, 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 importance of business data visualization as a communication tool.
- Understand the principles of visual perceptions and visual communications.
- Create effective data visualizations using tools such as Tableau.
- Design and execute data operations.
- Apply data visualization and business analytics frameworks to analyze a business situation.

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:

Goal 3: Good Health and Well-being	*Ensure healthy lives and promote well-being for all at all ages*
	We will use data and examples about public health in the lectures and practices. The course helps deepen our understandings of the recent Covid pandemic.
Goal 4: Quality Education	*Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*
	We will use data and examples about online learning platform in the lectures and integrate into practices. Students will be able to examine disparities in access to quality online education.
Goal 9: Industry, Innovation and Infrastructure	*Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation*
	Data and context in different industry will be examined. Students will also explore various sources to identify an interesting data visualization context in a particular industry. The class will explore data insights across multiple industries together.

ASSESSMENTS
Summary

Component	Weight
In-class Quizzes	25%
Assignments	25%

Group project	35%
Class participation	15%
Total	100%

Details of Assessments

In-class Quizzes (25%)

There is an in-class quiz on each day on Tuesday, Wednesday, and Thursday. Each quiz takes 20 minutes and accounts for 8-10% of the course grade.

Assignments (25%)

- **Assignment 1 (individual):** Data Visualization in Life (10%), due by *October 22, 11:59pm*.
- **Assignment 2 (individual):** Data Visualization Practice (15%), due by *October 28, 11:59pm*.

Group Project (35%)

Throughout the week, you need to work on a data visualization project with your team members. Your team needs to identify a context (can be either business related or not), obtain corresponding data, explore the data patterns, and compose a storyline or dashboard that would effectively communicate critical and interesting data insights for the context. See the project description for details.

There are three components for this group projet:

- Project Topic Identification (10%), due by *Oct 24, 12:00 pm (noon)*
- Project Final Presentation (15%), presentation on Oct 27, slides due by *Oct 26, 11:59 pm*
- Project Final Report (10%), final report due by *Oct 27, 11:59 pm*

Participation (15%)

You are expected to attend all classes and actively participate in class discussions. Class participation accounts for 15% of your final course grade and is used to reward students for contributing to the in-class learning environment. You **earn** the participation points only if you are an active participant and contributor to the learning. Participation points will be deducted if you are late to the classes.
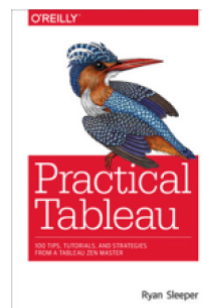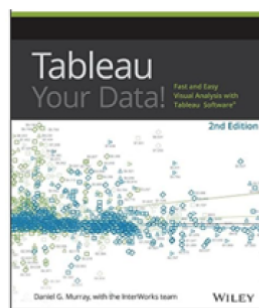
LEARNING MATERIALS
Textbooks
The following book serves as an optional textbook for this course (highly recommend you getting a copy). The relevant chapters to read are marked in the preparation section of the course schedule below. In addition, we will use customized materials.

- Scott Berinato, 2006. Good Charts: The HBR Guide to Making Smarter, More Persuasive Data Visualizations. *Harvard Business Publishing*.

The following books (from beginner level to intermediate level, and to advanced level) are also highly recommended as technical references to Tableau Software (You can get free access to all these books through UBC Library).

- Daniel Murray, 2016. Tableau Your Data!. *Wiley*.
- Ryan Sleeper, 2018. Practical Tableau. *O'Reilly.*
- Ryan Sleeper, 2020. Innovative Tableau. *O'Reilly*.

Reading Materials
Other reading materials will be posted on Canvas.

Software Tools
We will primarily use Tableau for this course. You are required install the software and get familiar with the interface by yourself. Other software packages and tools maybe also demonstrated in class.

Tableau: Please install the *Tableau Desktop* **and** *Tableau Data Prep* on your computer by *October 22nd, 2023.*

- Download URL: http://www.tableau.com/tft/activation.
- Product key for the course: TCY2-05CC-5D90-CD22-BDF1

COURSE-SPECIFIC POLICIES AND RESOURCES
Missed or late assignments, and regrading of assessments
Per the standard for RHL courses, late submissions will not be accepted and will receive a grade of zero.

Group Policy

You will be assigned into a group. Each group will have 4-5 members. Please contribute the best you can to the group assignments. In the case that you feel other members of your group are not pulling their weights, or are disrupting the functioning of the group, try to resolve the issue as a group. If you need further assistance you may always contact the instructor for help. We will conduct formal peer evaluations at the end of the course. Each member will have the opportunity to evaluate the efforts and contributions of others. In the case that the intra-group evaluations indicate a problem, the individuals who did not pull in their weights will receive discounted grades towards the group components.

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 [DO NOT MODIFY]

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.

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm (Musqueam) people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.
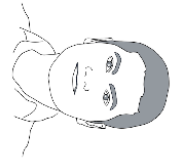
COURSE SCHEDULE

Below is the tentative class schedule. It is subject to change based on the learning progress and outcomes. "GC" refers to the "Good Charts" Book. "V" refers to pre-recorded videos, and "RM" refers to reading materials posted on Canvas.

Date	Part	Topic	Preparations	Due
Mon Oct 23	AM	o Course Introduction o Effective Data Visulization o Data Visualization Canvas	V: History of DV V: Visual Principles	Assign. 1
	PM	o Tableau Basics o Summary Statistics in Tableau	V: Tableau Intro	
Tue Oct 24	AM	o A Closer Look at Charts o Dimensions & Segmentation	V: Charts: Good, Bad, Ugly	Quiz 1 Group Project Topic
	PM	o Tableau Intermediate		
Wed Oct 25	AM	o Time Series Visualization o Spatial Visualization	RM	Quiz 2
	PM	o Tableau Advanced		
Thu Oct 26	AM	o Business Intelligence & Dashboards o Data Visualization in the Age of AI	RM	Quiz 3
	PM	o Integrated Data Visualizations		
Fri Oct 27	AM	o Data Visualizations in Industry o Guest Speakers		Group Project Slides
	PM	o Group Project Presentations o Learning Reflection		Assign. 2

BAIT518 DATA VISUALIZATION
MBAN Class Schedule (October 2023)

	Prime (23)	Operate (24)	Integrate (25)	Navigate (26)	Transform (27)
Morning	Assign 1: Data Visualization in Life	Quiz	Quiz	Quiz	Data Visualization in Industry
	Course Introduction	A Closer Look at Charts	Time Series Visualization	Business Intelligence & Dashboards	Guest Speakers
	Goal Setting	Dimensions & Segmentation	Spatial Visualization	Age of AI: Impacts of LLMs	Networking
	Effective Data Visualization			Data Visualization in the Age of AI	
	Data Visualization Canvas				
Afternoon	Summary Statistics in Tableau	Tableau Intermediate	Tableau Advanced	Tableau Comprehensive	Group Project Presentations
	Tableau Basics	Diamonds	Taxi Driving	Airbnb in Vancouver	Learning Reflections
	Understanding MOOC Performance	Sales Targets	COVID Evolution	Assign 2: Yelp Reviews in Vancouver	
		Group Project Proposal			

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Legend
- Reflection
- Idea
- Skill
- Practice
- Assessment
- Future
- Activity