



ITIS 5434: Data Visualization for Business Analytics

PMBA Summer 2026

Instructor	Jacob Smale
Email Address	jacob.smale@carleton.ca
Class Times	August 7-8, 2026
Modality	In-person

Pre-Requisites & Preclusions:

None

Course Description/Instructor's Statement

Carleton Calendar Description

Principles, techniques, technology and applications of data visualization for decision making; cognition and visual perception; types of visual analysis; interactive dashboards; story telling; infographics.

Includes: Experiential Learning Activity

Course Learning Objectives:

After successfully completing this course, you will be able to:

1. Develop an understanding of the fundamentals of communication and alignment around concepts that are required for effective data presentation
2. Develop an introductory level of competency in PowerBi
3. Understand the fundamentals of visual data discovery including the ability to: select appropriate chart types and representation; and identify trends and distributions.
4. Understand the fundamentals of visual data deployment including the ability to: select and use preattentive attributes; design and implement dashboards; and effectively apply storytelling principles
5. Obtain basic knowledge needed to critique various visualizations and to identify design principles that make good visualizations effective.
6. Have a basic understanding of some of the challenges present in making data understandable across a wide range of potential audiences

Required/Optional Materials & Prices

- **Textbook(s):**

- *Storytelling with Data: A data visualization guide for business professionals*, Cole Nussbaumer Knaflic, John Wiley & Sons, 2015

IMPORTANT: The main textbooks is available **FREE** through [Carleton's library](#).

Alternatively, you can access them through the following links:

- 1) [Storytelling with Data Book](#):
 - a. Log-in using your Carleton username and password
 - b. Select "Read Online"

- **Software:**

- Microsoft Excel
- PowerBi: You are **REQUIRED** to have Microsoft PowerBi Desktop installed on your computer. This is available for free from Microsoft. You may wish to sign in using your Carleton credentials although it is not necessary to do so.
- **IMPORTANT:** Please refer to Brightspace for detailed download instructions (especially for those of you using a MAC computer)

Grading Scheme

Pre-Class Exercise	10%
In-Class Team Visualization Challenge	50%
In-Class Team Visualization Demo	20%
Final Deliverable	20%
TOTAL	100%

Policies & Accommodations

<https://students.carleton.ca/course-outline/>

<https://carleton.ca/pmc/current-students/academic-accommodations/>



Stay updated with important notifications and announcements from Carleton University, by downloading the Carleton University App!

Preparation and Participation:

Students must complete any pre-class deliverables and be prepared to participate in class and complete the in-class deliverables.

Course Schedule

Pre-Class Preparation

- Students are expected to complete assigned pre-class materials posted on Brightspace prior to the first class.

Day 1 – Morning

- Course overview
- Data visualization foundations

Day 1 – Afternoon

- Data visualization concepts and applications
- Excel and data preparation
- In-class case activity

Day 2 – Morning

- Dashboard design and development
- Power BI

Day 2 – Afternoon

- In-class case activity
- Course wrap-up

Post-Class

- Students are required to complete a short post-course deliverable. Full details will be provided on Brightspace.

***Refer to Academic Calendar for dates University Closed Dates and Holidays**

<https://calendar.carleton.ca/academicyear/>

Late Assignments:

No late assignments or quizzes will be accepted.

Requests for extension without penalty will be considered in cases of illness, family emergency, or other exceptional circumstances. Documentation may be required.

e-Proctoring

If e-Proctoring is implemented for digital exams, please note that tests and examinations in this course will use a mandatory remote proctoring service provided by Scheduling and Examination Services. You can find more information at <https://carleton.ca/ses/e-proctoring/> .

Students are responsible for ensuring that the application is working properly on your computer during the exam. Failure to ensure proper functioning of CoMaS will constitute a violation of the exam rules and may be grounds for an allegation that you have violated the Academic Integrity Policy.

The minimum computing requirements for this service are as follows:

Hardware: Desktop, or Laptop

OS: Windows 10 or higher, Mac OS 10.14 or higher

Internet Browser: Google Chrome, Mozilla Firefox, Apple Safari, or Microsoft Edge

Internet Connection (High-Speed Internet Connection Recommended)

Webcam (HD resolution recommended)

Note: Tablets, Chromebooks, Smartphones and Windows-based tablets are not supported at this time.

Deferred In-Class Tests:

In the event that you are unable to write a midterm, test, or other scheduled assessments due to extenuating circumstances (such as a death in the family, illness, etc.), you must provide appropriate supporting documentation to your professor. Upon review, a deferred test may be offered. Please note that students who do not provide valid documentation or fail to offer a reasonable explanation for missing an assessment will receive a grade of 0% for that test.

Deferred final exams:

If you wish to defer a **Formal Final Exam**, you – the student – must reach out to the registrar's office with the proper documentation prior to the deadline (please refer to <https://carleton.ca/registrar/deferral/> for dates). Once the request has been put through, your instructor will be notified for their approval.

Use of Generative Artificial Intelligence

AI use in this course varies by assignment. Some activities will explicitly invite you to use AI tools; others will require work completed independently. Please read each assignment's instructions carefully for permitted and prohibited uses. When AI is used, be transparent about how you used it and apply critical judgment to verify its accuracy and relevance.

Contribution to Program Learning Goals ([MBA](#)):

MBA Learning Goal	Not Covered	Introduced	Taught but Not Assessed	Taught <u>and</u> Assessed
MB1 Leadership and Collaboration <i>Graduates will be equipped for leadership and collaboration.</i>			✓	
MB2 Communication <i>Graduates will be effective communicators</i>				✓
MB3 Critical Thinking and Problem Solving <i>Graduates will be skilled in critical thinking and problem solving.</i>		✓		
MB4 Functional Knowledge <i>Graduates will have functional knowledge of all areas of business.</i>		✓		
MB5 Global Business <i>Graduates will have an appreciation of the global environment of business.</i>		✓		
MB6 Ethical Reasoning <i>Graduates will be skilled in ethical reasoning and decision-making.</i>		✓		

ADDITIONAL INFORMATION

Course Sharing Websites:

Materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).

Recommended Calculator for Examinations:

If you are purchasing a calculator, we recommend any one of the following options: Texas

Instruments BA II Plus (including Pro Model), Hewlett Packard HP 12C (including Platinum model), Staples Financial Calculator, Sharp EL-738C & Hewlett Packard HP 10bII

Group work

The Sprott School of Business encourages group assignments in the school for several reasons. They provide you with opportunities to develop and enhance interpersonal, communication, leadership, followership, and other group skills. Group assignments are also good for learning integrative skills for putting together a complex task. Your professor may assign one or more group tasks/assignments/projects in this course. Before embarking on a specific problem as a group, it is your responsibility to ensure that the problem is meant to be a group assignment and not an individual one.

Grading

In accordance with the Carleton University Undergraduate Calendar (p 34), the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A - = 80-84	B - = 70-72	C - = 60-62	D - = 50-52
F = Below 50			

Grades entered by Registrar:
WDN = Withdrawn from the course
DEF = Deferred

Academic Regulations

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

<http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/>

Requests for Academic Accommodation

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the *Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances*, are outlined on the Academic Accommodations website (students.carleton.ca/course-outline).

Pregnancy Accommodation

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the [pregnancy academic accommodation process](#).

Religious obligation

Please contact your instructor with any requests for academic accommodation during the first two

weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, please review the [religious academic accommodation process](#).

Academic Accommodations for Students with Disabilities

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the [Paul Menton Centre website](#).

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit the [Equity and Inclusive Communities website](#).

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see the [Senate Policy on Accommodation for Student Activities \(PDF, 25 KB\)](#).

Academic Consideration for Medical and Other Extenuating Circumstances

Due to medical and other extenuating circumstances, students may occasionally be unable to fulfil the academic requirements of their course(s) in a timely manner. The university supports the academic development of students and aims to provide a fair environment for students to succeed academically. Medical and/or other extenuating circumstances are circumstances that are beyond a student's control, have a significant impact on the student's capacity to meet their academic obligations, and could not have reasonably been prevented. Students may request Academic Consideration for Coursework or Other Academic Deliverable. For further information please review the [Procedure for Academic Consideration](#) and the [FAQ page](#).

Scheduling and Examination Support

Scheduling and Examination Services provides various supports for both in-term and end-of-term tests and exams. Details can be found on the [Exam Support website](#).

Academic Integrity:

Violations of academic integrity—presenting another’s ideas, arguments, words or images as your own, using unauthorized material, misrepresentation, fabricating or misrepresenting research data, unauthorized co-operation or collaboration or completing work for another student—are a serious academic offence, weaken the quality of the degree, and will not be tolerated. Penalties may include; a grade of Failure on the submitted work and/or course; academic probation; a refusal of permission to continue or to register in a specific degree program; suspension from full-time studies; suspension from all studies at Carleton; expulsion from Carleton, amongst others. Students are expected to familiarize themselves with and follow the Carleton University Student Academic Integrity Policy which is available, along with resources for compliance at: <https://carleton.ca/registrar/academic-integrity/>

Centre for Student Academic Support:

The Centre for Student Academic Support (CSAS) is a centralized collection of learning support services designed to help students achieve their goals and improve their learning both inside and outside the classroom. CSAS offers academic assistance with course content, academic writing and skills development. Visit CSAS on the 4th floor of MacOdrum Library or online at: <https://carleton.ca/csas/>

Other Important Information:

- Students must always retain a copy of all work that is submitted.
- All final grades are subject to the Dean’s approval.
- For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton cmail account. If you do not have or have yet to activate this account, you can do so by visiting <https://carleton.ca/its/get-started/new-students-2/>