



Carleton
University

Sprett
School of Business

Carleton University
BUSI 2401 A, B, & C
INTRODUCTION TO DATA ANALYTICS
Fall 2024

Key Details

Instructors:

Mike Hine (Section A & Course Coordinator)

Email: mike.hine@carleton.ca

Zoom Office Hours: TBA

Alex Ramirez (Section B)

Email: alex.ramirez@carleton.ca

Zoom Office Hours: Wednesday 1PM-3PM

Ali Nazari (Section C)

Email: alinazari@cunet.carleton.ca

Zoom Office Hours: TBA

TAs: TBA

Email: TBA

Modality: In person

Section	Day & Time
A	Wednesdays 8:35am – 11:25am
B	Tuesdays 11:35am – 2:25pm
C	Fridays 8:35am – 11:25am

Prerequisite: BUSI 1401.



Course Description

This course prepares students to gather, manipulate, and clean data from a variety of sources within a programming environment. Students will be introduced to visual data exploration and the deployment of data-driven visual storytelling. Topics include APIs, Data Science Programming, SQL, Relational/NoSQL databases, data visualization.

Learning Outcomes

At the completion of the course, students should:

- Understand the different types of analytics and how they are applied to inform and solve complex business problems.
- Understand and implement the fundamentals of functional programming using a current programming language and environment.
- Ability to manipulate, and clean different types of data within a programming environment.
- Ability to perform preliminary data analysis within a programming environment.
- Understand the fundamentals of visual data discovery including the ability to select appropriate chart types and representation and identify trends and distributions.
- Understand the fundamentals of visual data deployment including the ability to select and use pre-attentive attributes, design and implement dashboards, and effectively apply storytelling principles.

Required Materials

Technologies

- windows or mac laptop (for in-class activities)
- Python (installed automatically with Anaconda)
- Spyder Python IDE (installed automatically with Anaconda)
- Jupyter Notebook (installed automatically with Anaconda)
- Tableau Desktop

I would recommend installing Anaconda on your machine. It is available here: <https://www.anaconda.com/>. If you can't, for whatever reason, Spyder and Jupyter are available through VDI. Tableau you **must** install on your own machine. It is not available through VDI.

Readings:

Primary Reference

Runestone Academy

Downey, A., Elkner, J., Severance, C. and B. Ericson et al. (2021). Python for Everybody – Interactive Edition.

Secondary References

Runestone Academy

Miller, B., Boggs, J., and J.L. Pearce (2021). How to Think like a Data Scientist. Second Edition.

Other

Wickham, H. . (2014). Tidy Data. *Journal of Statistical Software*, 59(10), 1–23.

Ranjan, J. & C. Foropon (2021). Big Data Analytics in Building the Competitive Intelligence of Organizations. *International Journal of Information Management*. 56,

Raghupathi, W., Raghupathi, V. (2021). Contemporary Business Analytics: An Overview. *Data*, 6(86).

Course Deliverables and Evaluation

Your final grade will be composed of the following:

In Class Exercises (~9 ICE)	20%
A1 (Python)	10%
A2 (Pandas)	15%
A3 (Visualization)	10%
Midterm	20%
Final Exam	25%

- Assignments 1 & 2 are due at 10 pm EST on the assigned due date.
- Assignments 1 & 2 are individual. Assignment 3 is a group assignment.
- In Class Exercises are individual although peer help is encouraged (however, no copying/sharing files etc.)
- Late assignments/exercises will be penalized 20% per day.
- Midterm: The midterm is two hours long and is scheduled by examination services outside of class time. It is mandatory for students to write the exam at the scheduled time unless a medical reason or death in the family occurs. Both aforementioned scenarios require documentation. In these scenarios a deferred midterm must be written to pass the course.
- Final Exam: Scheduled during regular exam period. It is two hours long and is comprehensive, but more weight is given to the second half of the course.
- **To receive a passing grade in this course** students must complete all assignments, in class exercises, and exams. Additionally, students must get over 45% on a weighted average of the two exams.

Course Schedule

The following schedule may be changed at the discretion of the instructor.

Week	Topic / In class work & assignments	Readings
1	Course Administration / Introduction / Software Overview	
2	Python I: functions / input / print / ICE I	Chpt. 1; Chpt. 2; Chpt 5.1-5.3; 5.6-5.11
3	Python II: conditionals & looping / ICE II	Chpt. 4, 6
4	Python III: lists, tuples & dictionaries / ICE III	
5	Python IV: files, error handling / ICE IV	
	ASSIGNMENT 1 DUE: Friday October 11th	
6	Pandas I: Introduction to Jupyter, Pandas and DataFrames/ Manipulating DataFrames / ICE V	
	FALL BREAK: no class	
7	Pandas II: Collecting Data from different sources / ICE VI	
	MIDTERM EXAMINATION (outside of class time)	
8	PANDAS III: Pandas: Relational Database / SQL / ICE VII	
9	PANDAS IV: Cleaning Data / ICE VIII	
	ASSIGNMENT 2 DUE: Wednesday Nov. 20th	
10	Visualization I / ICE IX	
11	Visualization II / ICE X	
12	Assignment 3 Presentations Nov. 29 th (C), Dec. 3 rd (B), Dec. 4 th (A)	

Contribution to Programmatic Learning Goals

Program Learning Goal	Competencies Not Covered	Competencies Introduced (only)	Competencies Taught But Not Assessed	Competencies Taught and Assessed
CHECK (X) ONE PER ROW				
BC1 Knowledge <i>Graduates will be skilled in applying foundational business knowledge to appropriate business contexts.</i>		X		
BC2 Collaboration <i>Graduates will be collaborative and effective contributors in team environments that respect the experience, expertise and interest of all members.</i>	X			
BC3 Critical Thinking <i>Graduates will be discerning critical thinkers, able to discuss different viewpoints, challenge biases and assumptions, and draw conclusions based on analysis and evaluation.</i>		X		
BC4 Communication <i>Graduates will be effective and persuasive in their communications.</i>			X	
BI5 Global Awareness (BIB ONLY) <i>Graduates will be globally-minded.</i>	X			

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).

Required calculator in BUSI course 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, follower-ship 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).

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

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, visit the Equity Services website:

carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

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, visit the Equity Services website:

carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

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. carleton.ca/pmc

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 its 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: carleton.ca/sexual-violence-support

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.

<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline

Academic Integrity

Violations of academic integrity are a serious academic offence. 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 – weaken the quality of the degree and will not be tolerated.

Process: If an alleged violation occurs, all relevant documentation will be forwarded to the Dean. If the allegation proves true, the 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.

For a first offence, at a minimum, the penalty assigned will normally be a zero on the submitted work and at least a minimum full grade reduction of the final course grade. For a second offence, at a minimum, the penalty assigned will normally lead to a suspension from studies.

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/>.

Sprott Student Services

The Sprott Undergraduate Student Services Office offers program advising and overall student success support. Our team is available to discuss your academic goals and your program progression plans. We can also work with you to develop strategies for success, including study skills for Business. If you experience any difficulty this term or if you would like to access support, please contact our team at bcom@sprott.carleton.ca or at bib@sprott.carleton.ca.

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: carleton.ca/csas.

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 may wish to do so by visiting <https://carleton.ca/its/get-started/new-students-2/>
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