



## COMMERCE AND BUSINESS ADMINISTRATION COURSE OUTLINE AND SCHEDULE

<b>CSIS 3860:</b>	<b>DATA VISUALIZATION</b>
<b>Section:</b>	<b>001</b>
<b>Prerequisites:</b>	<b>None</b>
<b>Semester:</b>	<b>Summer 2023</b>
<b>Class / Lab Location:</b>	<b>NWN N5107</b>
<b>Class Time(s):</b>	<b>FRI: 9:30 AM – 12:20 PM</b>
<b>Instructor:</b>	<b>Dr. Samuel Otim</b>
<b>Email:</b>	<b><a href="mailto:otims@douglascollege.ca">otims@douglascollege.ca</a> (best way to reach me)</b>
<b>Office Location:</b>	<b>NWN 6218</b>
<b>Office Hours:</b>	<b>MON: 2:30 – 3:30 PM; WED: 3:30 – 4:30 PM; FRI 12:30 – 1:30 PM</b>

### COURSE MATERIALS

#### Textbooks:

- **Tableau Your Data** by **Daniel G Muray**, 2<sup>nd</sup> Edition, Wiley (Recommended)
- Tableau Desktop Manual/Documentation/Help  
<http://www.tableausoftware.com/support/help>.
- **The Big Book of Dashboards: Visualizing Your Data Using Real-World Business Scenario** by Steve Wexler, Jeffrey Shaffer and Andy Cotgreave, Wiley (Recommended)
- **Microsoft Power BI Quick Start Guide**, 2<sup>nd</sup> Edition, Packt publishing (Recommended)
- **Interactive Data Visualization for the Web**, by Scott Murray, 2<sup>nd</sup> Edition, O'Reilly (Recommended)

#### Software:

- Tableau desktop (<https://www.tableau.com/academic>)
- Power BI Desktop
- **Web Browser (Mozilla or Chrome)**

#### Hardware:

Access to a desktop computer or laptop with the following minimum requirements is required for the online learning sessions, office hour, hands-on, and working on assignments and tests.

**Windows based computer with 16 GB RAM, decent processor speed, SSD drive, webcam, microphone (if it is not embedded with the webcam) and speaker.**

**Note:** All the software demo built for the course, the labs and the tests are designed in a Windows-based operating system. If you have a MacOS machine, the instructor will not be able to provide any guidance for you in setting up the environment and on how to do the labs, assignments, and tests.

## COURSE DESCRIPTION

*In this course, students will learn the skills to present analytics results in a clear, concise, and visually appealing manner. This hands-on course will introduce students to various tools and techniques of data visualization, visualization best practices, and common pitfalls. Use of Data Visualization tools such as Tableau is adopted in this course for the hands-on skills. Students will also work on building targeted dashboards based on their audience's need. Other tools such as d3.js, dc.js, Google Charts, etc. are also introduced to reflect on the variety of data visualization tools available for a data analyst to visualize the results of analysis.*

## COURSE OBJECTIVES

After completing this course, the student will be able to:

- Explain foundations of Big Data Analytics & Data Mining Process
- Explain core skills for Information Visualization and available visualization tools available in market
- Demonstrate the use of data visualization tools such as Tableau and Power BI
- Examine effective ways of visual analysis
- Create compelling and effective interactive dashboards.
- Incorporate geospatial visualization in Dashboards
- Publish Dashboards
- Choose the right visualization tool for different data sets
- Tell a data story with visual analysis

## COURSE CONTENT

- Introduction to Big Data Analytics
- The importance of analytics and visualization in today's data-prevalent markets
- Introduction to Data Visualization using tools such as Tableau
- Effective ways of visualizing data using other data visualization tools such as Power BI
- Diverse types of Visual analysis – Time-Series, Deviation, Distribution and Correlation Analysis
- Interface components of a visualization tool such as Tableau
- The right visualization tool for different data sets – making the right choice

## METHODS OF INSTRUCTION

Lecture, demonstration, and hands-on exercises in the lab.

## MEANS OF ASSESSMENT

Component	Contribution to Final Grade
Assignments/Projects <sup>†</sup>	25%
Quizzes (2) *	10%
Mid-term Exam *	30%
Final Exam <sup>†*</sup>	35%
<b>Total<sup>§</sup></b>	<b>100%</b>

### Notes:

<sup>†</sup> **Assignment submissions:** All assignments will be administered from and submitted through The Blackboard

Community. Some class projects may involve working in groups.

‡ **Final exam schedule:** Check the final exam schedule for potential scheduling conflicts.

§ **Final course grade:** In order not to receive a UN grade in the course, a student must attend at least 70% of the classes; must attempt and hand in for marking at least 70% of the assignments, examinations and quizzes; and must attend the FINAL Exam. Work that is not handed in, or handed in too late for marking, will automatically receive a zero.

\* In order to pass the course, students must, in addition to receiving an overall course grade of 50%, also achieve a grade of at least 50% on the combined weighted examination components (including quizzes, tests, and exams). The student's achievement will be converted to a *letter grade*, in accordance with department policy (see letter grade chart on page 7).

## CLASSROOM CIVILITY AND SHARED RESPONSIBILITY

Empirical studies show that students and instructors both equally object to students who speak noisily during a lecture, who arrive late or leave early in an unruly way, or who interrupt the lecture with cell phone calls or comments unrelated to the immediate work at hand. Cell phones are not allowed to be used in the classroom at all. Laptops and tablets may be used with the sole purpose of taking notes or doing class exercises.

Generally, class time will include interactive lectures and class-participative programming exercises. Class time is valuable to us all. Students are expected to attend, complete all assignments and tests, and take part in problem-solving exercises. Students who miss a class are responsible for material covered in the missed class. Office hours are intended to assist students who have attended class and who wish additional help, not for the transmission of missed class content.

## IN-CLASS POLICIES AND PROCEDURES

1. **Timeliness:** Students are expected to be in class at the start of class. If a student must be late, contact the instructor with an explanation prior to the late class. Any late student should enter from and sit in the back of the classroom to not interrupt the flow of class activity.
2. **Assignment format and submission:** Every assignment will be given a due date, which will appear at the top of the first page. This date will correspond with a day on which the class meets regularly. Assignments need to be typed, and in complete executable form as outlined in each assignment instructions. All assignment files should have clear descriptive filenames, and must contain **cover sheet** with student name, number, filename, and purpose/functions of the file. All assignments should be submitted using the Blackboard Community. Please note that department office staff will not accept assignments. All assignments will be checked for plagiarism using automated and manual techniques, and there will be no tolerance for plagiarism. Any plagiarism will result in a score of zero for all parties involved. **Late assignments will be deducted marks (20% off for each school day).** Submissions beyond 60 hours from when it is due (start of class on due date) will be considered too late to mark.
3. **Term Quizzes and Exams:** Quizzes and examinations will be held according to the schedule. Missing an exam without a medical excuse and documentation will result in a mark of "0".
4. **Illness and other unavoidable circumstances:** Should you miss an assignment deadline or a quiz due to unavoidable circumstances or personal difficulties, please email me at otims@douglascollege.ca **BEFORE** the assignment deadline or quiz date. An official doctor's note will be required if the reason is illness.
5. **Preparation, Attendance and Participation:** Attendance will be taken on regular basis. The method of delivery includes classroom discussion and lab exercises; and so, students need to be present both

in order to participate and to learn. Students are expected to attend, complete all assignments and tests, and take part in class discussion and labs. Your final participation mark depends in part on your record of attendance and your reasonable preparedness to contribute to the discussion. In the curriculum outline on the next page, class assignments are included for each day's class: it is your responsibility to attend and to absorb the material sufficiently well for class work. Students who miss a class are responsible for material covered in the missed class. Office hours are intended to assist students who have attended class and who wish additional help, not for the transmission of missed class contents. Students are expected to behave appropriately while attending Douglas College.

6. **Phones and wireless devices:** Cells going off in the middle of class are disruptive and exhibit a lack of consideration for your fellow-student. Cell phones are not allowed to be used in the classroom at all. When you really need to communicate with someone, please do it outside the classroom. **All cell phones and wireless devices must be turned off or set to silent mode.** Laptops and tablets may be used with the sole purpose of taking notes or reading the textbook.
7. **Emailing your instructor:** During the course, your Douglas College student email account with must be used for communicating with your instructor. Include your Course and Section number in the Subject line of your email. Example: **CSIS3860 Section 001. Emailing from other email addresses (i.e. gmail, hotmail, etc) might not be answered in a timely fashion.** Please check the course outline and online blackboard community for schedule, deadlines, policies, procedures, and announcements before emailing the instructor, and follow proper email etiquette when emailing the instructor.

### Deadlines

1. **Assignment due dates:** Every assignment will be given a due date. The student is responsible for submitting the assignment at the deadline shown in the Blackboard.
2. **Late assignments** will not be accepted.
3. **Tests or examinations:** Tests and examinations will be offered only during the scheduled date and time. **Missed quizzes or exam will NOT be made up.**

### Illness and Unavoidable Circumstances

1. **Students should inform the instructor immediately** through email if there is a chance of missing a deadline, a quiz, or an exam.
2. COVID-19 symptoms do not automatically justify a student to submit his/her deliverables late. A student needs to present proof that he/she was incapacitated due to an illness.

### DOUGLAS COLLEGE CALENDAR, POLICIES AND PROCEDURES

Students are responsible for being familiar with the information contained in the Douglas College Calendar and policies and procedures relating to appeals, petitions and formal complaints, sexual and personal harassment, standards of conduct, violence, and academic honesty. College policies are available at <http://www.douglascollege.ca/about-douglas/governance/policies>

### Academic Integrity

1. **Plagiarism and Cheating:** There will be **zero tolerance** for any plagiarism or cheating. Douglas College, in common with other educational institutions, condemns academic dishonesty.
2. **Plagiarism:** presenting or submitting as one's own work the work, research, words, ideas, artistic imagery, arguments, calculations, illustrations or diagrams of another person or persons without explicit or accurate citation or credit; this includes submission of purchased material as well as material in which the student has permitted someone else (a fellow student, tutor, mentor or teaching assistant, friend, etc.) to contribute unacknowledged.
3. **Self-plagiarism:** submitting one's own work for credit in more than one course without the permission of the instructors, or re-submitting work, in whole or in part, for which credit has already

been granted.

4. **Cheating:** The possession or provision of unauthorized aids, assistance, or materials in the preparation of assignments, during examinations or in the completion of practical work, including but not limited to the following:
  - a. Copying or attempting to copy the work of another during an examination
  - b. Communicating work to another student during an examination
  - c. Possession of unauthorized aids, notes or electronic devices or means during an examination
  - d. Unauthorized possession of an examination or answer key
  - e. Submission of a substantially similar assignment / test by two or more students, except in the case where such submission is specifically authorized by the instructor.

**Student responsibility:** Students are responsible for conducting themselves honestly and ethically and for becoming familiar with and adopting the principles of academic integrity in their studies. This responsibility includes being vigilant with the use of sources and documentation to avoid plagiarism.

**Violations of Academic Integrity:** Violations of Academic Integrity policy are reported to the appropriate Responsible Administrator for adjudication and that serious and/or repeat offenses will lead to students being suspended or expelled.

For more information, see <https://www.douglascollege.ca/sites/default/files/docs/finance-dates-and-deadlines/Academic%20Integrity%20Policy%20w%20Flowchart.pdf>

## COVID-19 SAFETY STATEMENT: KEEPING OUR CAMPUSES HEALTHY

To help ensure the safety of our campus community, please adhere to the following guidelines.

### If you come to campus:

- Complete a daily self-assessment before coming to campus: <https://bc.thrive.health/>
- Follow all posted signage.
- Maintain physical distance of 2m (6 feet) from others. Do not congregate in groups.
- Wear a non-medical face mask in public areas or areas where physical distancing is not possible.

### DO NOT come to campus if:

- You are sick.
- You have been in contact with someone with a confirmed case of COVID-19 within the last 14 days.
- You have travelled or been in contact with someone who has travelled outside of Canada in the past 14 days.

If you are unable to attend a class due to illness, contact your instructor immediately.

### Illness on campus

If you become ill while on campus, contact Campus Security immediately for first aid and to report your symptoms. If you are concerned that you may have COVID-19, use the BC government COVID-19 self-assessment tool to help guide you on what to do. The province of BC has also set up a dedicated COVID-19 hotline at 1-888-COVID19 or text 604-630-0300. The service is available daily from 7:30 a.m. to 8 p.m. with information available in over 110 languages.

---

**Student Conduct:** Any student who displays disruptive or dangerous behavior will be asked to leave the classroom/lab by the instructor. Such behavior will be classified as misconduct. Reprimands and appeals will be exercised according to official college policy. A copy of the policy is available at <https://www.douglascollege.ca/sites/default/files/docs//A20%20Standards%20of%20Student%20Conduct.pdf>.

**Class Cancellation:** If a class is cancelled due to instructor illness or other unforeseen circumstance, a notification will be made through Blackboard and/or email to every student enrolled in the course. It is the responsibility of students to be proactive and to check announcements and/or e-mail before coming to class. Every effort will be made to ensure that the notification is made as soon as possible.

### IMPORTANT NOTE:

Students are responsible for all the announcements made in the classroom and lab concerning course information, schedule changes, and class cancellation, WHETHER OR NOT they are in attendance.

### COURSE SCHEDULE

(Note: This course schedule is tentative and subject to change; consistent with college policy and with notice to students)

Wk.	Date	Topic	Evaluated Components Due
1	May 12 <sup>th</sup>	Course Overview Big data and big data analytics Introduction to data visualization Connecting to data in Tableau Building your first visualization in Tableau	
2	May 19 <sup>th</sup>	Visualizing different types of data in Tableau	
3	May 26 <sup>th</sup>	Working with data in Tableau (cleaning and structuring messy data, calculations, and parameters)	
4	June 2 <sup>nd</sup>	Geographic visualizations and advanced Visualizations	Quiz #1 (5%)
5	June 9 <sup>th</sup>	Advanced visualizations continued	Assignment #1 due (5%)
6	June 16 <sup>th</sup>	Putting everything together in a dashboard	
7	June 23 <sup>rd</sup>	<b>Midterm Exam</b>	<b>Midterm (30%)</b>
8	June 30 <sup>th</sup>	Making visualization that look great and work well; Telling a data story	
9	July 7 <sup>th</sup>	Data Visualization using Power BI (getting data and data transformation strategies)	
10	July 14 <sup>th</sup>	Data Visualization using Power BI (building a data model)	Quiz #2 (5%)
11	July 21 <sup>st</sup>	Data Visualization using Power BI (leveraging DAX)	
12	July 28 <sup>th</sup>	Data Visualization using Power BI (various visualizations)	Assignment 2 Due (5%)

13	Aug 4 <sup>th</sup>	Data Visualization using Power BI (various visualizations) cond.	Project Due (15%)
	Aug Fir 11 <sup>th</sup> – Sat 19 <sup>th</sup>	Final Exam period. <i>Please Check the final exam schedule for potential scheduling conflicts.</i> <b>Note:</b> Final Exam is <u>Cumulative</u> (i.e., All materials and readings covered in the course). Please do not make travel or other arrangements until final exam date is set by the college.	

**Letter grade chart:** The letter grades and corresponding percentages listed below, effective as of Fall 1999, are used in the evaluation of coursework in credit courses. For previous percentages contact the Registrar's Office.

### DOUGLAS COLLEGE GRADING SYSTEM

Grade	Numerical Value	Achievement Level	Description
A+	4.33	95% and above	Outstanding Achievement
A	4.00	90% to 94%	
A-	3.67	85% to 89%	
B+	3.33	80% to 84%	Good Achievement
B	3.00	75% to 79%	
B-	2.67	70% to 74%	
C+	2.33	65% to 69%	Satisfactory Achievement
C	2.00	60% to 64%	
C-	1.67	55% to 59%	
P	1.00	50% to 54%	Marginal Achievement
F	0.00	49% and below	Unsatisfactory Achievement
FD	0.00	Failure due to academic dishonesty. This notation will remain on the student's transcript for two years following the student's graduation or last semester attended, at which time the student will become eligible to apply to have the grade converted to an "F" (Fail)	
UN	0.00	Student completed less than 70% of the total evaluation of the course or <u>missed more than 30% of the class where the instructor's Course Outline specifies that attendance is a course requirement.</u>	
W	N/A	Does not include in GPA calculation.	

**LINKS TO IMPORTANT INFORMATION AVAILABLE ON COLLEGE WEBSITE:**

1. [Minimum technical requirements for taking courses online at Douglas College](#)
2. [Technical support information for students on the College website](#)
3. [Academic Integrity Policy \(Douglas College Educational Policy\)](#)

Plagiarism and Cheating:

The use and/or reference of any/all websites (e.g. coursehero.com or similar) which host copies of Douglas College course work assessments such as but not limited to Quizzes, assignments, midterms, labs, exams, practical work, etc. constitutes plagiarism.

4. [Course transferability](#)
5. [Covid-19 safety and guidance](#)
6. [Dates and Deadlines](#)
7. [Bookstore](#)
8. [Accessibility Services](#) – Carrie Keen for CBA Students
9. [Library](#)

**!!!\*\* WISH YOU ALL THE VERY BEST FOR THIS COURSE \*\*!!!**