



Carleton
University

Sprott
School of Business

CARLETON UNIVERSITY
SPROTT SCHOOL OF BUSINESS
BUSINESS 3406 A

BUSINESS ANALYTICS PRINCIPLES

FALL 2023

Instructor: Alejandro Ramirez, PhD
Office: 7027 Nicol Building
Zoom Office Hours: Fridays 13:00 – 15:00 Hrs.
Email: Alex.Ramirez@Carleton.ca
Phone Number: 613-520-2600 x 8767

Class Times

<i>Section</i>	<i>Day</i>	<i>Time</i>	<i>Location</i>
A	Thursdays	11:35 – 14:25 Hrs.	NI3022

Modality: * Lectures will be in person, not suitable for online students – the sessions include experiential learning exercises.

Pre-requisites & precluded Courses:

Precludes additional credit for [BUSI 4406](#).
Prerequisite(s): [BUSI 2401](#) and [STAT 2602](#).

COURSE CALENDAR DESCRIPTION FROM THE 2023/2024 UNIVERSITY CALENDAR:

Evolution of Decision Support Systems. Decision Making. Business Intelligence. Foundation of Business Analytics. Lifecycle & Best Practices. Strategy, platforms, and Architecture. Data Sensemaking. Model Development.

COURSE DESCRIPTION:

This course uses the evolution of organizational decision making and the systems that support decision making in organizations to develop a critical view of the use of computers in organizations. The goal is to understand the role of **Business Analytics** in today organizational environment and the principles that guide Business Analytics Professionals. It was designed to help you:

- become aware of the present state of knowledge in Business Analytics
- become familiar with academic and non-academic literature in this field.
- develop a personal perspective on emerging theories and their application, current debates, and controversies within these disciplines.
- develop analytical and critical skills to deal with these issues (i.e., help you develop, present, and defend arguments)



Approach taken in this Course:

Business Analytics started as a *buzzword*, but it has become a sought-after skill in recruitment. Business Analytics is a **data-driven process that provides insight**. It may report on historical information or predictions about future events. The end goal of analytics is to add value through analyses that turn data into information. This course introduces a range of methods and modern technologies that are used in business analytics. We start from where we are all comfortable, MS-Excel, and move into a world of more sophisticated tools that need a different understanding of manipulation of data through tools that are for modelling, visualization, and forecasting.

The instructional approach will include some software demos and illustrate applications of decision support technologies to problems in finance, marketing, manufacturing, services and health care management, and information systems consulting.

The course introduces recent approaches to managerial decision analysis and support. The student will be exposed to formal methods and specific computer-based tools. The course deals with advanced techniques and tools to support decision making processes.

Learning Outcomes:

The main goal of this course is to provide the students with an understanding of management support capabilities of information technologies to support the function of Business Analytics, and the development of skills to become a business analytics professional. At the conclusion of this course, students will be able to:

1. explain the theory of *Bounded Rationality* and its implications on managerial decision making.
2. demonstrate an understanding of the underlying theories, methods and technologies used in business analytics.
3. analyse and applied alternate methods for designing, developing, and implementing Business Analytics tools.
4. identify and justify opportunities for management support systems development and the specific considerations which apply in their effective management.
5. Become aware of trends and best practices in Business Analytics.

Reading(s)/Textbook(s)/Required Materials (incl. technical requirements):



Custom Edition for Carleton University: Introduction to Data Mining and Analytics: Business Analytics BUSI3406 – ISBN: 978-1-284-01729-8 [It can be purchased directly through VitalSource: <https://www.vitalsource.com/en-ca/custom/9781284017298>]

You are expected to read the assigned material before the indicated lecture. These chapters are part of the midterm and final assessments. Students are expected to discuss the relevance to our course and to organizations.

Additionally, students will need to either install the VMWare client in their devices or launch it from their browser to use Sprott's Virtual Desktop Interface through **Carleton's CU Desktop** [<https://cudesktop.carleton.ca/>].

Course Requirements & Methods of Evaluation (including due dates):

[SATISFACTORY IN TERM PERFORMANCE MEANS A STUDENT SUBMITTED ALL ASSIGNMENTS, PARTICIPATED IN THE GROUP PRESENTATION, & WROTE THE MIDTERM AND FINAL EXAMINATIONS]

Your final grade will be composed of the following:

- ✓ **Three Assignments 25%**
 - Decision Style Inventory (5%) due September 27, 2023 – by 10:00 PM
 - Excel Assignment (10%) due October 11, 2023 – by 10:00 PM
 - SAS Assignment (10%) due November 22, 2023 – by 10:00 PM
- ✓ **Presentation 5%**
 - Presentation is due December 07, 2023 – schedule of presentations will be revealed at the beginning of the session.
- ✓ **Midterm Examination 30%** - October 19, 2023 (during class time)
- ✓ **Final Exam 40%** - 3-hour examination scheduled by the university.

There is a Brightspace site for this course. All expected deliverables for this course are expected to be submitted through the site. You will find your feedback there as well. It is important that you visit the site regularly to stay on top of the course. When communicating with the instructor, please use your Carleton University email and include in your message the course number.

Assignments:

THESE ARE INDIVIDUAL ASSIGNMENTS! That does not mean that you cannot discuss them with your classmates, on the contrary, business analytics works better when you are able to discuss the issues with your peers – collective intelligence is what has moved this field forward. What it means is that you need to do your own analysis and write your own reports. It is one of the most important skills you need to develop in this course. Therefore, once the analysis is finished, write your report considering that it is expected to empower your manager to make decisions. Most of the output generated during your analysis can be included only as appendices, the body of the report only needs to refer to it when necessary.

Late assignments will be penalized 25% and accepted only within a 24-hour period, after that will be considered missed and tabulated as 0 [Zero].

Presentation:

You are expected to choose a topic. In Brightspace there is a list of topics of business analytics trends. Topics will be assigned via email. You need to investigate and make a 10-minute presentation on one of those topics.

In Class Midterm Examination:

There will be an in-class examination that needs to be submitted in Brightspace. You need to bring your own computer to the classroom.

Final Exam:

Scheduled during the University Examination Period.

Outline*

Lecture	Date	Topic
1	09/07	<p style="text-align: center;"><u>THEORIES</u></p> <p>Welcome – Course Administration – Overview From Decision Making and Support Systems to Business Analytics: A historical introduction Nelson Chapter 1-available in Brightspace.</p>
2	09/14	<p>Decision Making, Systems, Modelling, and Support – Business Analytics Concepts, Methodologies, and Technologies: An Overview. The Business Analytics Lifecycle</p> <p style="text-align: center;"><u>TOOLS & TECHNIQUES</u></p> <p>Excel: Opportunities and Limitations Textbook Chapter 2 Keep Excel in your tool set</p>
3	09/21	<p>Data Warehousing & Data Marts – Analyzing Data in Excel 2021 with Business Intelligence</p> <p style="text-align: center;">Nelson Chapter 5 – Available in Brightspace</p>
4	09/28	<p>Data Visualization Excel's Power Query, Power Pivot & Power BI Textbook Chapter 1 Data Mining and Analytics</p>
5	10/05	<p>From Excel to SAS – Data Preparation Data Analyses & SAS Enterprise Guide I Textbook Chapter 3 Data Preprocessing and Cleansing</p>
6	10/12	<p>Data Analyses & SAS Enterprise Guide II Textbook Chapter 4 Data Clustering</p>
	10/19	<i>Mid Term Exam</i>
	10/26	<i>Fall Break – No lecture</i>
7	11/02	<p>Predictive Modelling & SAS Enterprise Miner I Textbook Chapter 5 Classification</p>
8	11/09	<p>Predictive Modelling & SAS Enterprise Miner II Textbook Chapter 6 Predictive Analytics</p>
9	11/16	<p>Business Forecasting Gilliland et al. 2021 – Chapter 1: AI & ML in Forecasting</p>
10	11/23	SAS Forecast Studio
11	11/30	Artificial Intelligence & Expert Systems
12	12/07	<p style="text-align: center;"><u>TRENDS</u></p> <p>Big Data Emerging Trends Social Networking & the Cloud Student Presentations</p>

* Note: While every attempt will be made to keep to the schedule listed above, unforeseen circumstances may necessitate modifications throughout the semester.

CONTRIBUTION TO LEARNING GOALS OF THE PROGRAM ([BCOM](#), [BIB](#))

Program Learning Goal	Competencies Not Covered	Competencies Introduced (only)	Competencies Taught, But Not Assessed	Competencies Taught and Assessed
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 Spratt 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

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/>
-