



## BUSI 3406 A: Business Analytics Principles

### FALL 2025

<b>Instructor</b>	Migao Wu, PhD
<b>Email Address</b>	migaowu@cunet.carleton.ca
<b>Class Times</b>	<b>Section A: Wednesdays 8:35 am – 11:25 am</b>
<b>Modality</b>	* Lectures will be <b><i>in person</i></b> , not suitable for online students – the sessions include experiential learning exercises.
<b>Office Hours</b>	Mondays 3:00 pm – 4:00 pm or by appointment
<b>Office Location</b>	7027 Nicol Building
<b>TA Name/Email</b>	TBA

#### Pre-Requisites & Preclusions:

Prerequisites: [BUSI 2401](#) and [STAT 2601](#)

Preclusions: [BUSI 4406](#)

#### Course Description/Instructor's Statement

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

#### Instructor's Description:

This course explores the evolution of organizational decision-making and the systems that support it, aiming to foster a critical understanding of how computers and information technologies are used in modern organizations. The primary objective is to examine the role of **Business Analytics** in today's organizational landscape and the foundational principles that guide Business Analytics professionals.

By the end of the course, students will be able to:

- Understand the current state-of-the-art knowledge in Business Analytics
- Familiarize with both academic and practitioner-oriented literature in the field
- Develop a personal perspective on emerging theories, as well as ongoing debates and controversies
- Strengthen analytical and critical thinking skills to effectively analyze issues, construct, present, and defend arguments

#### Approach taken in this course:

Business Analytics, once considered a *buzzword*, has evolved into a highly valued skill in today's intensely competitive job market. At its core, Business Analytics is a **data-driven process designed to generate insights** – whether through analyzing historical data or making fact-based predictions about future events. The final goal is to create value by transforming raw data into meaningful information.

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This course introduces students to a variety of analytical methods and modern technologies used in Business Analytics. We begin with a familiar tool—Microsoft Excel—and gradually progress to more advanced platforms that require a deeper understanding of data manipulation, visualization, modeling, and forecasting.

The instructional approach combines theoretical foundations with practical applications. Students will engage with software demonstrations and explore real-world use cases of decision support technologies across various domains, including marketing, finance, manufacturing, services and healthcare management, and information systems consulting.

Throughout the course, students will be introduced to recent developments in managerial decision-making analysis and support. Emphasis will be placed on formal analytical methods and hands-on experience with computer-based tools designed to enhance the decision-making process.

### **Course Learning Objectives:**

The primary objective of this course is to equip students with a solid understanding of how information technologies can support managerial decision-making/functions through the methods of Business Analytics. In addition, developing the necessary skills to become effective business analytics professionals. By the end of the course, students will be able to:

1. Describe and explain the concept of Bounded Rationality and its theoretical and practical implications on managerial decision-making.
2. Demonstrate understanding of key theories, methods, and technologies used in Business Analytics.
3. Evaluate and apply various approaches to the design, development, and implementation of Business Analytics tools.
4. Identify and justify opportunities for developing management support systems, taking into account the factors critical to their successful use.
5. Recognize current trends and best practices in the field of Business Analytics.

### **Drop Course Policy**

The deadline for academic withdrawal follows the dates prescribed by Carleton University: <https://calendar.carleton.ca/academicyear/>

The deadline to drop this course with full fee adjustment is September 30, 2025. The last day to withdraw from full fall courses is November, 15th, 2025.

<b><u>Required/Optional Materials &amp; Prices</u></b>
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- The reading material will be available in Brightspace. 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 on their devices or launch it from their browser to use Sprott's Virtual Desktop Interface through **Carleton's CU Desktop** [<https://carleton.ca/cudesktop/>] to access software that they do not have on their own devices.
  - Students are not required to purchase textbooks or other learning materials for this course.
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## Grading Scheme

**[SATISFACTORY IN TERMS OF 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%**
  - Assignment #1 (5%)
  - Assignment #2 (10%)
  - Assignment #3 (10%)
- **Presentation – 10%**
  - During class time, the schedule of presentations will be posted later.
- **Midterm Examination – 25%**
  - During class time
- **Final Examination – 40%**
  - 3-hour examination scheduled by the university.

**Assignment, presentation, midterm exam, or final exam weights should not be shifted.**

## Important Dates to Note

Assignment #1	September 23 <sup>rd</sup> , 2025 by 11:59 PM
Assignment #2	October 7 <sup>th</sup> , 2025 by 11:59 PM
Assignment #3	November 18 <sup>th</sup> , 2025 by 11:59 PM
Presentation	December 3 <sup>rd</sup> , 2025
Midterm Exam	<b>October 15<sup>th</sup>, 2025 starting @ 8:35 AM</b>
Final Exam	TBA

University Academic Calendar: <https://calendar.carleton.ca/academicyear/>

There is a Brightspace site for this course. All expected deliverables for this course are expected to be submitted through the Brightspace 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 the course number in your message.

## 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!**

## Methods of Evaluation

### Assignments:

PLEASE NOTE: THESE ARE INDIVIDUAL ASSIGNMENTS!

- You are encouraged to discuss the concepts and challenges with your classmates – collaboration and peer conversation are key drivers of progress in Business Analytics. However, your analysis and written report must be completed independently. Developing this skill is a central objective of this course.
- Once you have completed your analysis, focus on writing a report that empowers a manager to make informed decisions. Most of the detailed output from your analysis should be placed in the Appendices. The main body of the report should reference this only when necessary.
- Late submission will incur a penalty of 5% per day in cases without medical certificates. Assignments that are not submitted after 10 days past the due date will receive a grade of 0 [zero]. Exceptions to this include verifiable illness and emergencies, only when communicated directly to me within three (3) business days following the due date.

### Presentation:

You are expected to select a topic for your presentation. Please form a group of 2 to 3 students. As a group, choose a topic of interest from the list of Business Analytics trends available on Brightspace. Each group will be responsible for researching the selected topic and delivering a 10-minute presentation. Additional details will be provided later.

### Midterm and Final Exam:

#### Midterm

- In-class midterm examination.
- Needs to be submitted in Brightspace.
- You will need to bring your own computer to the classroom.

#### Final Exam

Scheduled during the University Final Examination Period.

### Deferred Examinations/Assignments:

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. Your final exam will be formally scheduled. If you miss the deadline for applying for a deferral, please reach out to your instructor personally to discuss.

In the event that you are unable to write a **midterm** 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.

The **ONLY** date for a deferred midterm will be held on **Monday, October 27<sup>th</sup>, 2025 at 7:15am in NI 4030. No other deferral options will be considered.** You will receive 0 [zero] if you miss the deferred midterm.

### Preparation and Participation:

To make the most of this course, students are expected to come to each class well-prepared. Please ensure that you have completed the required readings or watched the assigned videos before attending class, as this will enhance your understanding of the material and allow you to actively engage in class discussions. Your participation is strongly encouraged, as sharing perspectives and asking questions are key to deepening your learning in Business Analytics. Regular attendance is essential—this course is delivered in person, and your consistent presence will contribute not only to your success but also to a richer learning environment for everyone.

### Course Schedule \*

Week #	Week of	Topic
1	Sep, 01	<b><u>Welcome &amp; Course Overview</u></b> <ul style="list-style-type: none"> <li>Course administration and expectations</li> <li>From Decision Making and Support Systems to Business Analytics</li> <li>THEORIES: Evolution of Business Analytics</li> <li>A historical introduction (To read: <i>Nelson Chapter 1 Analytics Overview</i> – available on Brightspace)</li> </ul>
2	Sep, 08	<b><u>Decision Making &amp; Bounded Relationality</u></b> <ul style="list-style-type: none"> <li>System, modeling, and support</li> <li>Overview of Business Analytics concepts, methodologies, and technologies</li> <li>The Business Analytics Lifecycle</li> <li>Tools: Excel – Opportunities and Limitations</li> <li>To watch: <i>5 Videos in Brightspace</i> (Simon on Bounded Rationality &amp; Mintzberg on Management)</li> </ul>
3	Sep, 15	<b><u>Data Warehousing &amp; Data Marts</u></b> <ul style="list-style-type: none"> <li>Analyzing data in Excel with Business Intelligence</li> <li>To read: <i>Nelson Chapter 5 The Analytics Lifecycle Toolkit</i> – available on Brightspace</li> </ul>
4	Sep, 22	<b><u>Data Visualization</u></b> <ul style="list-style-type: none"> <li>Excel's Power Query, Power Pivot &amp; Power BI</li> <li>To watch: <i>Video – McCandless's The Beauty of Data Viz</i></li> </ul> <b><u>Assignment #1 due on September 23<sup>rd</sup>, 2025 by 11:59 PM</u></b>
5	Sep, 29	<b><u>From Excel to Pandas</u></b>

		<ul style="list-style-type: none"> <li>• Python Pandas – Data Preparation</li> <li>• Data Analyses I</li> </ul>
6	Oct, 06	<b><u>Machine Learning</u></b> <ul style="list-style-type: none"> <li>• Concepts and Techniques</li> </ul> <b>Assignment #2 due on <u>October 7<sup>th</sup>, 2025 by 11:59 PM</u></b>
7	Oct, 13	<b><u>Midterm Exam: October 15<sup>th</sup>, 2025 during class time</u></b>
8	Oct, 20	<b><u>Fall Break – no classes</u></b>
9	Oct, 27	<b><u>Data Analyses II</u></b> <ul style="list-style-type: none"> <li>• Data splits</li> <li>• Modeling process</li> <li>• Model evaluation</li> </ul>
10	Nov, 03	<b><u>Predictive Modeling I</u></b> <ul style="list-style-type: none"> <li>• Python</li> <li>• SAS Enterprise Miner</li> <li>• Assessment</li> </ul>
11	Nov, 10	<b><u>Predictive Modeling II</u></b> <ul style="list-style-type: none"> <li>• RFM model</li> <li>• Data mining with ORANGE</li> </ul>
12	Nov, 17	<b><u>Business Forecasting</u></b> <ul style="list-style-type: none"> <li>• Time series analysis</li> <li>• To read: <i>Gilliland et al. 2021 Chapter 1: AI &amp; ML in Forecasting</i> – available on Brightspace</li> </ul> <b>Assignment #3 due on <u>November 18<sup>th</sup>, 2025 by 11:59 PM</u></b>
13	Nov, 24	<b><u>Artificial Intelligence &amp; Expert Systems</u></b>
14	Dec, 01	<b><u>TRENDS</u></b> <ul style="list-style-type: none"> <li>• Big Data Emerging Trends</li> <li>• Social Networking</li> <li>• The Cloud</li> </ul> <b>Student Presentations: <u>December 3<sup>rd</sup>, 2025</u> during class time</b>

\* Note: Although the schedule outlined above is expected to be followed, unforeseen circumstances may require adjustments during 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
<b>BC1 Knowledge</b> <i>Graduates will be skilled in applying</i>		✓		

<i>foundational business knowledge to appropriate business contexts.</i>				
<b>BC2 Collaboration</b> <i>Graduates will be collaborative and effective contributors in team environments that respect the experience, expertise and interest of all members.</i>	✓			
<b>BC3 Critical Thinking</b> <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>			✓	
<b>BC4 Communication</b> <i>Graduates will be effective and persuasive in their communications.</i>			✓	
<b>BI5 Global Awareness (BIB ONLY)</b> <i>Graduates will be globally-minded.</i>	✓			

### ADDITIONAL INFORMATION

#### Use of AI Tools in Coursework

Students are permitted to use AI tools (e.g., ChatGPT, DeepSeek, Copilot) to support their work on course deliverables. However, any use of AI must be disclosed clearly and transparently. For each assignment or presentation where AI tools are used, students must include a brief statement specifying which tools were used and how they were applied (e.g., idea generation, data analysis assistance). Failure to disclose the use of AI tools may be considered a breach of academic

integrity. Students remain responsible for ensuring the accuracy, originality, and academic quality of all submitted work.

### **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, 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](https://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](https://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](https://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](mailto: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](https://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](https://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](https://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](mailto:bcom@sprott.carleton.ca) or at [bib@sprott.carleton.ca](mailto: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](https://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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