



**CARLETON UNIVERSITY
AREA
BUSI4406 /SECTION A
2019/FALL
BUSINESS ANALYTICS**

Instructor: Hugh Cairns
Office Hours: By appointment
Email: hugh.cairns@cunet.carleton.ca

Course meets: Friday 2:35pm- 5:25pm

Pre-requisites Courses: Prerequisite(s): third-year standing and [BUSI 2400](#) with a grade of C or higher.

Course Description: Evolution of decision support systems. Business intelligence. Data mining and warehousing. Web analytics. Mobile apps for business analytics. Strategic use of information systems for competitive advantage.

Learning Outcomes: Introduction of the role of data mining in current business organizational strategy. This course will provide an overview of the different Analytics approaches by situating data mining in organizational and commercial context. Students will be expected to understand and communicate the business value of the business analytics and the merits of different analytical approaches.

The students will also participate in exercises in data preparation and profiling and hands on predictive modelling using a variety of data analytic techniques and practices using a SAS Enterprise Guide and SAS Enterprise Miner



Reading(s)/Textbook(s)/Required Materials:

(Parr-Rud) Business Analytics Using SAS® Enterprise Guide® and SAS® Enterprise Miner®: A Beginner's Guide. Copyright © 2014, SAS Institute Inc., Cary, NC, USA

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

3 Hands on Assignments	30%
Business Case	10%
Mid Term Exam	20%
Final Exam	40%
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TOTAL	100%

Course Software: SAS Enterprise Guide and SAS Enterprise Miner will be used to complete the course assignments. It is highly recommended that students familiarize themselves with SAS as much as possible before the assignments are distributed. SAS offers a free e training called *Prog 1* that provides an overview of the SAS interfaces and introduces data manipulation techniques that will be used in this course. The course can be located at: <http://support.sas.com/training/tutorial> at the bottom of the page. The Prog 1 course is usually 3 days in duration so please give yourself enough time to complete. For assignments, the course will use the SAS environment on Carleton's mydesktop platform. Instructions on how to access this portal will be given on the CU Learn site.

Assignments: Students will be given three assignments for completion before the beginning of class on the assigned date. Assignments must be submitted electronically before the start of the class following the class when the assignment was given. Failure to submit the assignments on time may result in the loss of marks. Students may work in groups to complete the assignments; however, each student must prepare and submit their own assignment.

Business Case: A Business Case will be assigned in week 10 (November 8, 2019) that is due in week (November 8th, 2019). Students will analyze a scenario and apply the learnings from the class to provide a 4 to 6 page (double spaced) strategic recommendation. All students must submit their own work and are subject to the academic integrity policies found at the bottom of this outline.

Mid Term Exam: A written midterm exam will be held in class during week 6 (Oct 11, 2019) in regular class time.

Final exam date: A final written exam will be scheduled during regular exam time.

Course Schedule:

Week	Date	Topic/Agenda	Pre-class Preparation
1	6/09/ 2019	<ul style="list-style-type: none"> • Introduction and review of course outlines, class norms and technical environment • Discussion on the spectrum of business • Analytics and the types of business problems that can be solved. • Discussion of Big Data • Introduction to the data lifecycle and how it supports analytical activities 	<ul style="list-style-type: none"> • Davenport, T. H. (2006). COMPETING ON ANALYTICS. Harvard Business Review, 84(1), 98-107. • Lecture notes • Parr-Rud Chapter (1)
2	13/09/2019	<ul style="list-style-type: none"> • Overview of Different types of Analytic Methods • Factors enabling Data Analytics • Factors Constraining Analytics • Steps in Analytic Project • Data Preparation for descriptive analysis • Implications of poor data 	<ul style="list-style-type: none"> • Reid, A., & Catterall, M. (2005). Invisible data quality issues in a CRM implementation. <i>Journal of Database Marketing and Customer Strategy Management</i> Vol 12 (4), 305-314. • Lecture Notes • Parr-Rud Chapters 3
3	20/09/2019	<ul style="list-style-type: none"> • Examination of the properties of data • Overview of data integration by means of the ETL process • Data manipulation techniques to support analytics • <i>SAS Enterprise Guide Tutorial</i> 	<ul style="list-style-type: none"> • Lecture Notes • Parr -Rud Chapter (2 & 5)
4	27/09/2019	<ul style="list-style-type: none"> • Data manipulation techniques to support analytics. • Descriptive Statistics • Market analysis • Introduction to the data model for ad hoc queries and reporting 	<ul style="list-style-type: none"> • Lecture Notes • Parr-Rud (4)
5	4/10/2019	<ul style="list-style-type: none"> • Data preparation for advanced analytics • Discussion of direct vs indirect analytics • Discussion of the motivation for Customer Segmentation to the marketing function • Overview of Methods of Segmentation 	<ul style="list-style-type: none"> • Parr-Rud (6) • Yang, A. X. (2004). How to develop new approaches to RFM segmentation. <i>Journal of Targeting, Measurement and Analysis for Marketing, Volume 13, Issue 1</i>, 50-60.
6	11/10/2019	<ul style="list-style-type: none"> • Guest Speaker • Mid Term 	None
7	18/10/2019	<ul style="list-style-type: none"> • Introduction to K- means clustering • Clustering using Enterprise Miner • <i>Introduction to Enterprise Miner</i> • Assignment 2 Distributed 	Assignment 1 Handed in before class <ul style="list-style-type: none"> • Parr-Rud 7

8	25/10/2019	<ul style="list-style-type: none"> • Introduction to Decision Trees 	<ul style="list-style-type: none"> • Parr-Rud 8 • A decision tree approach to modeling the private label apparel consumer . (2010). <i>Marketing Intelligence & Planning, Volume 28, Issue 1</i>, 59-69.
9	1/11/2019	<ul style="list-style-type: none"> • Introduction to Logistical Regression • Assignment 3 distributed 	<ul style="list-style-type: none"> • Assignment 2 Submitted before class • Parr-Rud 9
10	8/11/2019	<ul style="list-style-type: none"> • Discussion of Classical Statistical Techniques for data mining. • Discussion of problems with response definition • Introduction to Regression and Logistical Regression • Coping with Censored data and the two-stage model. • Business Case Distributed 	<ul style="list-style-type: none"> • Lecture Notes • Assignment 3 due before the start of Class)
11	15/11/2019	<ul style="list-style-type: none"> • Introduction Machine Learning • Neural Networks • Model Assessment 	<ul style="list-style-type: none"> • Lecture Notes
12	22/11/2019	<ul style="list-style-type: none"> • Further Considerations to the analytical approach to CRM • Potential Pitfalls of Analytics for CRM • Ethical Considerations of analytics • Review 	<ul style="list-style-type: none"> • Business Case Submitted before class • Nguyen, Bang (2011). The Dark Side of CRM, <i>The Marketing Review Vol 11 No.2</i> pp137-149. • Boyd, D., & Crawford, K. (2012). Critical Questions for Big Data; Provocations for a cultural, technological, and scholarly phenomenon. <i>Information, Communication, and Society Vol. 15 No. 5</i>, 662-679.

Preparation and participation: Students are expected to have read the readings assigned. This will help the students understand the context of the analytical method(s) that will be covered in class.

Missed assignments and deferred examination: The only valid excuse for missing a deadline or midterm is for medical reasons or death in the family and must be documented with a medical certificate. Any other reason (such as travel, etc...) will not be considered. In such circumstances, separate arrangements will be made. If you miss a deadline or midterm for a reason that is not deemed as legitimate, your midterm mark will be zero.

Deferred Final Examination: Students unable to write a final examination because of illness or other circumstances beyond their control must contact the instructor and the Registrars Office in writing to request a deferred exam. Permission may be granted when the absence is supported by a medical certificate and or appropriate document/s to support the reason for the deferral.

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.

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 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

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 is 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. 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/>.

Sprott Student Services

The Sprott student services office, located in 710 Dunton Tower, offers academic advising, study skills advising, and overall academic success support. If you are having a difficult time with this course or others, or just need some guidance on how to successfully complete your Sprott degree, please drop in any weekday between 8:30am and 4:30pm. Our advisors are happy to discuss grades, course selection, tutoring, concentrations, and will ensure that you get connected with the resources you need to succeed! <http://sprott.carleton.ca/students/undergraduate/learning-support/>

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 hard 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 <http://carleton.ca/ccs/students/>
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