



ITIS5432 A

Business Analytics Methods

Thursdays, 8:30am -11:30pm, DT701

Instructor: Hugh Cairns

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Office Hours: By Appointment

Course Description: Tools for data analytics; analyzing data beyond statistics; data mining and predictive modeling; time series analysis and forecasting; neural networks algorithms in business analytics.

Learning Objectives: 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.

Course Prerequisites: The prerequisites for this course are: [ITIS 5431](#) and [BUSI 5801](#) (or equivalent).

Textbook(s):

None

Drop Course Policy:

The deadline for academic withdrawal is the last day of classes (each term).

Grading Scheme:	3 Hands on Assignments	30%
	Business Case	10%
	Class Participation	10%
	Final Exam	50%
	TOTAL	100%

Course Software: SAS Enterprise Guide 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 CULearn site.

Assignments: Students will be given three assignments for completion before the beginning of the next class. Assignments must be submitted electronically before the start of the class following the class when the assignment was given. SAS Enterprise Guide will be used to complete the assignments. 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 4 (November 30, 2017) that is due in week 6 (Dec 12, 2017). 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.

Final exam date: A final written exam will be held in class on December 21 2017 in regular class time.

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: All assignments not submitted by the start of class (8:30am) will receive a grade of 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 MBA 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.

Course Schedule

Week	Date	Topic/Agenda	Pre-class Prep
1	09/11/ 2017	<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. • Examination of different analytical strategies • Introduction to the data lifecycle and how it supports analytical activities 	<ul style="list-style-type: none"> • Chen H. et al. (2012). Business Intelligence and Analytics: From Big Data to Big Impact, <i>MIS Quarterly (December) Vol 36 No4. Pp1165-1188</i> • Kiron, D., & Shockey, R. (2011). Creating Business Value with Analytics. <i>MIT Sloan Management Review Vol 53. No. 1, 57-63.</i> • Davenport, T. H. (2006). COMPETING ON ANALYTICS. <i>Harvard Business Review, 84(1), 98-107.</i>
2	16/11/2017	<ul style="list-style-type: none"> • Examination of the properties of data • Overview of data integration by means of the ETL process • Introduction to the data model for ad hoc queries and reporting • Discussion of data quality and sources of poor data • to data manipulation techniques to support analytics • Introduction to Enterprise Guide <p>Assignment 1 distributed: Data integration and ad hoc reporting</p>	<ul style="list-style-type: none"> • SAS ELearning Prog1 completed • Reid, A., & Catterall, M. (2005). Invisible data quality issues in a CRM implementation. <i>Journal of Database Marketing and Customer Strategy Management Vol 12 (4), 305-314.</i> • An Overview of Business Intelligence Technology By Surajit Chaudhuri, Umeshwar Dayal, Vivek Narasayya <i>Communications of the ACM, Vol. 54 No. 8, Pages 88-98 (http://dl.acm.org/citation.cfm?id=1978562&picked=formats&CFID=847413913&CFTOKEN=21122990)</i>
3	23/11/2017	<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 • Introduction to K- means clustering <p>Assignment 2 distributed: Exploring the differences in Segmentation techniques</p>	<ul style="list-style-type: none"> • (Assignment 1 due before the start of Class) • McCarty, J. A., & Hastak, M. (2007). Segmentation approaches in data-mining: A comparison of RFM, CHAID, and logistic regression. <i>Journal of Business Research Vol 60, Issue 6, 656-662.</i> • 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, 50-60.</i>
4	30/11/2017	<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. <p>Assignment 3 distributed: Response models and evaluation Case Study distributed</p>	<ul style="list-style-type: none"> • (Assignment 2 due before the start of Class) • Scott A. Neslin, Sunil Gupta, Wagner Kamakura, Junxiang Lu, and Charlotte H. Mason (2006) Defection Detection: Measuring and Understanding the Predictive Accuracy of Customer Churn Models. <i>Journal of Marketing Research: May 2006, Vol. 43, No. 2, pp. 204-211.</i> Burez, Johnathon & Van den Poel, Dirk (2007). CRM at a pay-tv company: Using analytical models to reduce customer attrition by targeted marketing for subscription services. <i>Expert Systems and Applications, Vol. 32 (2), pp 277-288</i>
5	07/12/2017	<ul style="list-style-type: none"> • Alternate approaches to prediction/ classification • Introduction of Decision Trees • Introduction to Neural Networks 	<ul style="list-style-type: none"> • (Assignment 3 due before the start of Class) • A decision tree approach to modeling the private label apparel consumer . (2010). <i>Marketing Intelligence & Planning, Volume 28, Issue 1, 59-69.</i>
6	14/12/2017	<ul style="list-style-type: none"> • Model Assessment • Further Considerations to the analytical approach to CRM 	<ul style="list-style-type: none"> • Case study due before the start of Class • Nguyen, Bang (2011). The Dark Side of CRM, <i>The Marketing Review Vol 11 No.2 pp137-149.</i>

		<ul style="list-style-type: none"> • Potential Pitfalls of Analytics for CRM • Ethical Considerations of analytics • Review 	<ul style="list-style-type: none"> • Wagar et al (2012). My Customers Are in My Blind Spot: Are They Changing and I cannot See It. <i>Journal of Service Research</i> 15(2) 150-165 • Boyd, D., & Crawford, K. (2012). Critical Questions for Big Data; Provocations for a cultural, technological, and scholarly phenomenon. <i>Information, Communication, and Society</i> Vol. 15 No. 5, 662-679.
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Policy on Mobile Devices

The use of mobile devices IS NOT PERMITTED in this class. It is disruptive to the instructor and class members. If you carry such a device to class, please make sure it is turned off. If an emergency situation requires you to keep it turned on, please discuss this with your instructor prior to class.

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 instructor 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.

Person with Disabilities

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Religious Observance

Students requesting academic accommodation on the basis of religious observance should make a formal, written request to their instructors for alternate dates and/or means of satisfying academic requirements. Such requests should be made during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist, but no later than two weeks before the compulsory academic event.

Accommodation is to be worked out directly and on an individual basis between the student and the instructor(s) involved. Instructors will make accommodations in a way that avoids academic disadvantage to the student.

Students or instructors who have questions or want to confirm accommodation eligibility of a religious event or practice may refer to the Equity Services website for a list of holy days and Carleton's Academic Accommodation policies, or may contact an Equity Services Advisor in the Equity Services Department for assistance.

Pregnancy

Pregnant students requiring academic accommodations are encouraged to contact an Equity Advisor in Equity Services to complete *a letter of accommodation*. The student must then make an appointment to discuss her needs with the instructor at least two weeks prior to the first academic event in which it is anticipated the accommodation will be required.

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 expulsion; suspension from all studies at Carleton; suspension from full-time studies; a refusal of permission to continue or to register in a specific degree program; academic probation; and a grade of Failure in the course, 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/>.

Course Sharing Websites

Student or professor 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).

Important dates and deadlines

<https://sprott.carleton.ca/students/mba/dates-deadlines-policies/>