



ITIS5432 A

Business Analytics Methods

Thursdays, 2:30pm -5:30pm, 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,. The students will also participate in exercises in data preparation and profiling and hands on predictive modelling using a variety of data mining techniques and practices

For the purpose of this course, we will be situating the data mining discussion and assignments in the customer relationship management context. Students will be expected to understand and communicate the business value of the data mining exercises. Students will complete exercises and assignments using a SAS Enterprise Guide and SAS Enterprise Miner.

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

Textbook(s):

Linoff, G. S., & Berry, M. J. (2011). *Data Mining Techniques: For Marketing, Sales, and Customer Relationship Marketing*. Indianapolis, IN: Wiley Publishing Inc.

Drop Course Policy:

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

Grading Scheme:	Hands on Assignments (3 of 4)	60%
	Contribution to Class Discussion	10%
	Final Exam	30%
	TOTAL	100%

Assignments: Students will be given four assignments of which 3 will be graded. Students wishing to submit all four assignments will receive a grade for all assignments; however only the top three assignments will be counted for the final grade. Assignments must be submitted electronically before the start of the class following the class when the assignment was given.

Final exam date: A final written exam will be held in class on December 17 2015 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 (2:30pm) 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 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. Deferred exams are not granted for students who have made travel arrangements that conflict with examination schedule.

Course Schedule

Week	Date	Topic/Agenda	Pre-class Prep
1	5/11/ 2015	<ul style="list-style-type: none"> • Discussion on the spectrum of business analytics • Introduction and Discussion of Customer Relationship Marketing (CRM). • Overview of the use of Analytics for CRM. • Introduction to the data lifecycle and how it supports analytical activities • Software set up 	<ul style="list-style-type: none"> • Linoff & Berry chapters 1 & 2 • 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> • Ngai et al E. W. (2009). Application of data mining techniques in customer relationship management; A literature review and classification, <i>Expert Systems with Applications Vol. 36, 2592-2602.</i>

2	12/11/2015	<ul style="list-style-type: none"> • Introduction to the predictive analytical process. • Discussion of the Analytics environment • Introduction to data manipulation techniques to support analytics • Introduction to Enterprise Guide <p>Assignment 1 distributed: Data Prep and Profiling</p>	<ul style="list-style-type: none"> • Linoff & Berry chapters 3 & 4 • 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.
3	19/11/2015	<ul style="list-style-type: none"> • Overview of the Customer Lifecycle • Discussion of the motivation for Customer Segmentation to the marketing function • Discussion of direct vs indirect analytics • Overview of Methods of Segmentation • Introduction to K- means clustering <p>Assignment 2 distributed: RFM Segmentation</p>	<ul style="list-style-type: none"> • (Assignment 1 due before the start of Class) • Linoff & Berry chapter 12 & 13 • McCarty, J. A., & Hastak, M. (2007). Segmentation approaches in data-mining: A comparison of RFM, CHAID, and logistic regression. <i>Journal of Business Research</i> Vol 60, Issue 6, 656-662. • 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.
4	26/11/2015	<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: Regression for response models</p>	<ul style="list-style-type: none"> • (Assignment 2 due before the start of Class) • Linoff & Berry chapter 5 & 6 (pp 195-209) • 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</i>: May 2006, Vol. 43, No. 2, pp. 204-211. • 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</i>, Vol. 32 (2), pp 277-288
5	03/12/2016	<ul style="list-style-type: none"> • Alternate approaches to prediction/classification • Introduction of Decision Trees • Introduction to Neural Networks <p>Assignment 4 distributed: Decision Trees and Neural Networks</p>	<ul style="list-style-type: none"> • (Assignment 3 due before the start of Class) • Linoff & Berry chapter 6 (pp 213-231) • A decision tree approach to modeling the private label apparel consumer . (2010). <i>Marketing Intelligence & Planning</i>, Volume 28, Issue 1, 59-69.
6	10/12/2016	<ul style="list-style-type: none"> • Model Assessment • 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"> • (Assignment 4 due before the start of Class) • Tammo et al (2010). Analytics for Customer Engagement. <i>Journal of Services Research</i> 13(3), pp.341-356 • 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 • Nguyen, Bang (2011). The Dark Side of CRM, <i>The Marketing Review</i> Vol 11 No.2 pp137-149

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

Students with disabilities requiring academic accommodations in this course are encouraged to contact a coordinator at the Paul Menton Centre for Students with Disabilities to complete the necessary letters of accommodation. After registering with the PMC, make an appointment to meet and discuss your needs with me at least two weeks prior to the first in-class test or ITV midterm exam. This is necessary in order to ensure sufficient time to make the necessary arrangements. Please refer to <http://www.carleton.ca/pmc/> for all PMC information.

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: <http://www2.carleton.ca/sasc/advisingcentre/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).