TED ROGERS SCHOOL
Information Technology Management

Ryerson University
The Chang School of Continuing Education

RYERSON UNIVERSITY

Ted Rogers School of Information Technology Management and G. Raymond Chang School of Continuing Education

COURSE OF STUDY
2017-2018

(C)ITM 618 – Business Intelligence and Analytics

1.0 PREREQUISITE

The prerequisite for this course is ITM 501 or (ITM 107 and ITM 500) or Direct Entry. Students who do not have the prerequisites will be dropped from the course.

2.0 INSTRUCTOR INFORMATION

- Name:
- Office Phone Number:
- E-mail address:
- Faculty/course web site(s): https://my.ryerson.ca
- Office Location & Consultation hours:
    - Your instructor is available for personal consultation during scheduled consultation hours which are posted on their office door or on the course shell in D2L Brightspace. However, you are advised to make an appointment by e-mail or by telephone before coming to ensure that the professor is not unavoidably absent.
- E-mail Usage & Limits:

Students are expected to monitor and retrieve messages and information issued to them by the University via Ryerson online systems on a frequent and consistent basis. ***Ryerson requires that any official or formal electronic communications from students be sent from their official Ryerson E-mail account.*** As such emails from other addresses may not be responded to.

3.0 CALENDAR COURSE DESCRIPTION

This course provides an introduction to business intelligence and analytics, defined as the extensive use of data, statistical and quantitative analysis, exploratory and predictive models, and fact-based management to drive decisions and actions. The development and use of data warehouses and data marts, and the application of selected data (including text and web) mining techniques to business decision making is illustrated. Students actively participate in the delivery of the course through case and project presentations.

4.0 COURSE OVERVIEW

Fact-based management has always been a critical management practice, only gaining more attention by recent trends such as the overabundance and variety of data available to managers, progress in technologies that can process such data, and the intensity of competition that drives the quest for ever increasing organizational efficiency. The organizations that will sustain their competitive edge in this environment will be those that not only invest in technologies to capture, store, process, and report data, but add human creativity to these processes. Thus this course aims to arm students with major skills required for business analytics as well as an understanding of critical issues and trends in this area.

5.0 COURSE OBJECTIVES

- To gain an understanding of how managers use business analytics to formulate and solve business problems and support decision making
- To become familiar with the processes needed to develop, report, and analyze business data
- To identify key components of Business Intelligence tool sets, differentiate between BI tools and practices and other legacy/emerging technologies, apply IT/strategic frameworks that are enabled by BI tools and practices, articulate examples of how businesses are using BI tools to enhance competitiveness and profitability, recommend BI tools and practices that align with business strategies based on case analyses.

6.0 EVALUATION

The grade for this course is composed of the mark received for each of the following components:

Evaluation Component	**Percentage of the Final Grade**
Labs	5%
3 Assignments	10%
Group Project	15%
Midterm Examination	30%
Final Examination	40%
Total	**100%**

NOTE: Students must achieve a course grade of at least 50% to pass this course.

Citation Format for Essays and Term Papers
All essay assignments, term paper and other written works must adhere with APA citation format. Technical errors (spelling, punctuation, proofing, grammar, format, and citations) and/or inappropriate levels of language or composition will result in marks being deducted. You are encouraged to obtain assistance from the Writing Centre (www.ryerson.ca/writingcentre) for help with your written communications as needed.

You can find APA guidelines and academic referencing from the following online resources:

a) Ryerson Writing Support Web site:
http://www.ryerson.ca/content/dam/studentlearningsupport/resources/citation-conventions/APA%20Basic%20Style%20Guide.pdf

b) Ryerson Library for APA style guide: https://library.ryerson.ca/guides/style/

7.0 POSTING OF GRADES

- All grades, on assignments or tests must be posted or made available to students through the return of their work. Grades on final exams must be posted. However, as there may be other consideration in the determination of final grades, students will receive their official final grade in the course only from the Registrar. Final official course grades may not be posted or disclosed anywhere by an instructor.
- Posting of grades on the Course Management System (D2L Brightspace) is preferred. If grades are posted in hard copy they must be posted numerically sorted by student identification number after at least the **first four digits** have been removed. Instructors must inform students in all course management documentation of the method to be used in the posting of grades. Students who wish not to have their grades posted must inform the instructor in writing.
- Some graded work will be returned to students prior to the last date to drop a course without academic penalty.

8.0 TOPICS – SEQUENCE & SCHEDULE

Session	Topic	Learning Outcomes	Readings	Activities & Due Dates
1	An Overview of Business Intelligence, Analytics and Decision Support	- Familiarize yourself with important BI/BA/DSS terminology, concepts, and issues	Ch. 1 Lecture Notes	
2	Data Modeling for Business Analytics	- Understand descriptive Analytics - Become familiar with the concept of statistical modeling for business - Develop Linear Regression Model for Business - Develop visual Analytics - Become familiar with performance dashboards	Ch. 2 Lecture Notes	**Lab 1**
3	Introduction to **R** and Data Warehousing	- Understand the difference between operational databases and data warehouses - Become familiar with the concept of a "data mart" and various data warehouse architectures - Understand OLAP operations - Analyze future data warehousing trends - Understand the R environment	Ch. 3 Lecture Notes	**Lab 2**
4	Data Mining Techniques	- Apply (supervised) classification techniques - Apply (unsupervised) hierarchical clustering techniques - Apply (unsupervised) non-hierarchical clustering techniques - Mine association rules from given data	Ch. 4 Lecture Notes	**Lab 3** **Assignment 1**
5	Text and Web Analytics	- Understand the concept of Natural Language Processing - Apply text mining to a collection of documents	Ch. 5 Lecture Notes	**Lab 4**

		- Apply sentiment analysis to a corpus of user-generated content - Become familiar with different aspects of web mining - Understand social media analytics		
6	Social Network Analysis and Community Detection	- Understand the concepts of Social network data and Social Network Analysis (SNA) - Apply SNA to analyze network data and online communication - Become familiar with different community detection approaches	Lecture Notes	**Lab 5** **Assignment 2**
7	**Midterm Examination**			**Intro. Group Project**
8	Decision Making Analysis	-Understand decision making in different scenarios (certainty, uncertainty) - Become familiar with advanced tools and techniques for managerial decision making	Ch. 6 Lecture Notes	
9	Introduction to Big Data	- Critically analyze the similarities and differences between traditional and "big" data collections - Become familiar with big data technologies such as Hadoop and NoSQL	Ch. 7 Lecture Notes	**Assignment 3**
10	Big Data Analytics	- Understand and apply big data and stream analytics - Become familiar with advanced tools and techniques for managerial decision making - Become familiar with major big data vendors	§ 7.6, 7.7 Lecture Note	
11	Predictive Analytics with **R**	- Using R for Big Data Analytics - Using R for real time data analysis	Lecture Notes	
12	Emerging BI/BA Trends and Future Impacts	- Understand the concept of BI/DA in a cloud computing environment - Critically analyze BI/BA impacts on organizations - Evaluate the issues of legality, privacy, and ethics in the BI/BA context	Ch. 8	**Group Project**

9.0 TEACHING METHODS

The pedagogical approach for this course is based on the principles of experiential learning. The course will incorporate the following teaching/learning methods: Lectures, readings, case study analysis, labs exercises, group project and discussions are the primary teaching methods in this course. Students are expected to have studied the assigned readings and completed any online or written pre-class assignments prior to attending the lectures. The lectures will review and expand the textual material and provide students with the professor's commentary, examples, and illustration. The case studies will be used to link theoretical foundations to practice in a business context. The group project will enable students to develop their "soft skills". Each student is expected to contribute to assigned tasks/assignments and the group project. An additional 9 hours will be required each week for independent reading, research, and practice using the software.

10.0 TEXTS & OTHER READING MATERIALS

Title: Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 4th Edition
Author: Ramesh Sharda, Dursun Delen, Efraim Turban
Publisher: Pearson
ISBN: 978-0134633282

Suggested/Recommended Textbook
Title: Modeling Techniques in Predictive Analytics with Python and R.
Author: Thomas W. Miller
Publisher: Pearson
ISBN-13: 978-0133892062

Other readings/cases will be distributed in class or electronically.

11.0 VARIATIONS WITHIN A COURSE

All sections of a course (Day and CE sections) will follow the same course outline and will use the same course delivery methods, methods of evaluation, and grading schemes. Any deviations will be posted on D2L Brightspace once approved by the course coordinator.

12.0 OTHER COURSE, DEPARTMENTAL, AND UNIVERSITY POLICIES

- For more information regarding course management and departmental policies, please consult the **'Appendix of the Course of Study'** which is posted on the Ted Rogers School of Information Technology Management website, http://www.ryerson.ca/content/dam/itm/documents/cos/Appendix.pdf. This appendix covers the following topics:
  - **12..1** Attendance & Class Participation
  - **12..2** Email Usage
  - **12..3** Request for Academic Consideration
    - **12..3.1** Ryerson Health Certificate
    - **12..3.2** Academic Accommodation for Students with Disabilities
    - **12..3.3** Religious, Aboriginal or Spiritual Observance
    - **12..3.4** Re-grading and Recalculation
  - **12..4** Examinations & Tests
    - **12..4.1** Period of Prohibition from Testing
    - **12..4.2** Make-Up of Mid-Term Tests, Assignments and Other Assessments During the Semester
    - **12..4.3** Make –Up of Final Exams
    - **12..4.4** Missing a Make-Up
  - **12..5** Late Assignments
  - **12..6** Standard of Written Work
  - **12..7** Academic Grading Policy
  - **12..8** Academic Integrity
    - **12..8.1** Turnitin.com
  - **12..9** Student Rights