Toronto Metropolitan University

The Chang School of Continuing Education

TED ROGERS SCHOOL Information Technology Management

(C) ITM 618– Business Intelligence and Analytics

COURSE OUTLINE FOR 2025-2026

Prerequisite(s): [(ITM 207 or ITM 200) and (QMS 102 or QMS 210)] or in the two-year Business Technology Management Ontario College Diploma Graduate Program

Faculty/Contract Lecturer Information

- **Faculty/Contract Lecturer Name:**
- **Office Location:**
- **Office Hours:**
- **Phone:** (416) 979 – 5000, ext.
- **Course Website:** my.torontomu.ca (for courses using D2L)
- **Email Address:** youremail@torontomu.ca

Email Policy

Students are expected to monitor and retrieve messages and information sent through D2L and TMU email on a frequent and consistent basis. In accordance with the Policy on TMU Student E-mail Accounts (Policy 157), Toronto Metropolitan University (TMU) requires that any electronic communication by students to TMU faculty or staff be sent from their official university email account. Communications sent from other accounts may be disregarded.

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.

Course Details

Teaching Methods

If you are registered in an in-person or a virtual classroom, instruction will take place at scheduled hours, following the approach outlined in D2L Brightspace. If you are registered in a Chang School Distance Education course, please follow the schedule, course outline and learning modules as outlined in D2L Brightspace.

Note: All assessments in this course, regardless of its delivery format, will be held in-person on campus. This applies to in-person, virtual, and online courses, including sections/courses delivered through the Chang School.

Course Materials

Course Materials

1. **Title**: Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking
   Author: Foster Provost, Tom Fawcett
   Publisher: O'Reilly
   ISBN: 978-1449361327
   Price: $74.95

2. **Title**: Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 5th Edition
   Author: Ramesh Sharda, Dursun Delen, Efraim Turban
   Publisher: Pearson
   ISBN: 978-0134633282
   Price: $65.95

Suggested/Recommended Textbook

Title: Modeling Techniques in Predictive Analytics with Python and R.
Author: Thomas W. Miller
Publisher: Pearson
ISBN-13: 978-0133892062
Price: $63.99
Other readings/cases will be distributed in class or electronically.

Course Learning Outcomes

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.

- To gain an understanding of how managers to 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 implement analytical models in the software tools, interpret the results of business analytics and their implications to business administrations and make data driven decisions to optimize the business process and address issues in business administrations
- To identify key components of a Business Analytics process, implement analytical models in the software tools, interpret the results of business analytics and their implications to business administrations and make data driven decisions to optimize the business process and address issues in business administrations.

Academic Integrity

Academic integrity is integral to your learning, the credibility of your degree or certification, and the integrity of the university as a whole. Senate Policy 60: Academic Integrity defines academic misconduct, provides a non-exhaustive list of examples of behaviours that may be considered as academic misconduct, and explains how academic misconduct concerns are evaluated and decided. The entirety of the policy applies in this course. As well, please note that submitting work created in whole or in part by artificial intelligence tools unless expressly permitted by the faculty/contract lecturer, is considered a violation of Policy 60.

Generative AI Course Policy, Plagiarism Detection, and Virtual Proctoring

Generative AI Course Policy

Use of Generative AI (e.g. ChatGPT, Grammarly, Perplexity, DeepL Translator) to develop or assist with any ideas or material submitted for coursework is expressly prohibited in this course. Use of Generative AI in this manner will be considered a breach of Policy 60.

Turnitin or another originality detection software

Turnitin is a plagiarism prevention and detection service to which TMU subscribes. It is a tool to assist faculty/contract lecturers in determining the similarity between students' work and the work of other students who have submitted papers to the site (at any university), internet sources, and a wide range of books, journals and other publications. While it does not contain all possible sources, it gives faculty/contract lecturers some assurance that students' work is their own. No decisions are made by the service; it generates an "originality report," which faculty/contract lecturers must evaluate to judge if something is plagiarized.

Students agree by taking this course that their written work will be subject to submission for textual similarity review to Turnitin. Instructors can opt to have student's papers included in the Turnitin database or not. Use of the Turnitin service is subject to the terms-of-use agreement posted on the Turnitin website. Students who do not want their work submitted to this plagiarism detection service must, by the end of the second week of class, consult with their faculty/contract lecturer to make alternate arrangements. Students who choose not to have their papers screened for textual similarity review by turnitin may be required to submit additional work with their research essay. For example:

- an annotated bibliography of each source used in your paper; and/or
- the first few pages of each cited source used in your paper

Even when an faculty/contract lecturer has not indicated that a plagiarism detection service will be used, or when a student has opted out of the plagiarism detection service, if the faculty/contract lecturer has reason to suspect that an individual piece of work has been plagiarized, the faculty/contract lecturer is permitted to submit that work in a non-identifying way to any plagiarism detection service.

Virtual Proctoring Information

Online exam(s) within this course use a virtual proctoring system. Please note that your completion of the exam will be recorded via the virtual platform and subsequently reviewed by your faculty/contract lecturer. The virtual proctoring system provides recording of flags where possible indications of suspicious behaviour are identified only. Recordings will be held for a limited period of time in order to ensure academic integrity is maintained.

TMU supports Respondus Lockdown Browser with Monitor. Access to a computer that can support remote recording is your responsibility as a student. The computer should have the latest operating system, at a minimum Windows (11 and 10 or Mac (OS X 10.15 to 14.0+) and web browser Google Chrome or Mozilla Firefox. You will need to ensure that you can complete the online exam using a reliable computer with a webcam

and microphone available, as well as a high-speed internet connection. Please note that you will be required to show your TMU OneCard prior to beginning to write the exam. Should a student not have a OneCard, government issued ID can be displayed to the camera, showing only the picture and name (all other information can be covered by the student). A virtual proctoring web page that addresses privacy concerns and includes a FAQ is available for students.

Information will be provided prior to the exam date by your faculty/contract lecturer who may provide an opportunity to test your set-up or provide additional information about online proctoring. Since videos of you and your environment will be recorded while writing the exam, please consider preparing the background (room/walls) so that personal details are not visible, or move to a room that you are comfortable showing on camera.

Copyright

The course materials provided to you are copyrighted, and may not be shared without my express written permission. Do not share these materials (e.g. course outline, lecture slides, assignment instructions) with others and do not post them on the internet during the course, or at any time after. If you do so, Policy 60 will apply.

Academic Integrity Resources

To learn more about Policy 60 and how to avoid academic misconduct, please review and take advantage of these resources:

- Policy 60: Academic Integrity: www.torontomu.ca/senate/policies/academic-integrity-policy-60/
- Academic Integrity Office website: www.torontomu.ca/academicintegrity
- "Academic Integrity in Space" game: https://games.de.torontomu.ca/aio/#/
- "Academic Integrity in Cyberspace!" game: https://www.torontomu.ca/aic/#/
- Student Life and Learning Support: www.torontomu.ca/student-life-and-learning/learning-support

Topics and Course Schedule

Week	Topic	Readings
1	**Introduction to Business Intelligence, Analytics and Decision Support** • Get familiarized yourself with important BI/BA/DSS terminology, concepts, and issues	B1 – CH01 B2 – CH01
2	**Business Intelligence and Data Warehousing** • Understand the difference between operational databases and data warehouses • Define the concept of a "data mart" and various data warehouse architectures • Apply OLAP operations • Get familiarized future data warehousing trends	B2 – CH03
3	**Data Cleaning and Visualization** • Describe the nature of data • Explain the methods used to make real-world data analytics ready • Identify different types of visualization techniques • Understand the capabilities and limitations of dashboard	B2 – CH02
4	**Introduction to Data Mining** • Get familiarized with the wide range of applications of data mining • Understand the standardized business analytics process • Describe Supervised and unsupervised data mining	B1 – CH02 B2 – CH04
5	**Predictive Analytics** • Apply (supervised) classification techniques • Understand with correlation analysis • Describe attribute/variable selection • Explain parameter estimation	B1 – CH03 B2 – CH04
6	**Statistical Modeling: Regression Analysis** • Get familiarized with the concept of statistical modeling for business • Demonstrate linear/logistic regression model for business • Identify "optimal" model parameters based on data	B1 – CH04
7	**Midterm Examination**	
8	**Similarity, Neighbors, and Clusters** • Describe (unsupervised) hierarchical clustering techniques • Describe (unsupervised) non-hierarchical clustering techniques • Explain similarity of objects described by data • Apply similarity for prediction	B1 – CH06 B2 – CH04

9	**Model Performance Analytics and Model Visualization** • Understand visualization of model performance under various kinds of uncertainty • Explain further consideration of what is desired from data analytics results • Explain underfitting and overfitting, cross-validation and regularization. • Get familiarized with profit curves; cumulative response curves; lift curves; ROC curves	B1 – CH05 B1 – CH08
10	**Representing and Mining Text** • Explain representation of text for data analytics • Understand the concept of Natural Language Processing • Apply text mining to a collection of documents	B1 – CH10 B2 – CH05
11	**Introduction to Big Data** • Understand the similarities and differences between traditional and “big” data collections • Get familiarized with big data technologies such as Hadoop, Apache Spark and NoSQL	B2 – CH07
12	**Emerging Business Analytics Trends and Future Impacts** • Describe the concept of BI/DA in a cloud computing environment • Understand BI/BA impacts on organizations • Explain advanced BA Tasks and Techniques	B1 – CH12 B2 – CH08

Evaluation

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

Evaluation Component	Due Date	Percentage of Final Grade	Anticipated Return Date
Assignment #1	Week 6	5%	Week 8
Assignment #2	Week 10	5%	Week 12
Course Project	Week 11	15%	Week 12
Midterm Exam	Week 7	30%	Week 8
Final Exam	TBA	45%	TBD
Final Grade		100%	

Note: Students must achieve a course grade of at least 50% to pass this course.
At least 20% of the grade based on individual work will be returned to students prior to the last date to drop a course in good academic standing. For Fall 2025, this is Friday November 14, 2025. For Winter 2026, this is Friday March 27, 2026.

University Policies

You are reminded that you are required to adhere to all relevant university policies found in their online course shell in D2L and/or on the Senate website. Please refer to the Course Outline Appendix for more detail.

Important Resources Available at Toronto Metropolitan University

- The University Libraries provide research workshops and individual consultation appointments. There is a drop-in Research Help desk on the second floor of the library, and students can use the Library's virtual research help service to speak with a librarian, or book an appointment to meet in person or online.
- Student Life and Learning Support offers group-based and individual help with writing, math, study skills, and transition support, as well as resources and checklists to support students as online learners.
- You can submit an Academic Consideration Request when an extenuating circumstance has occurred that has significantly impacted your ability to fulfill an academic requirement. You may always visit the Senate website and select the blue radio button on the top right hand side entitled: Academic Consideration Request (ACR) to submit this request.
  For Extenuating Circumstances, Policy 167: Academic Consideration allows for a once per semester ACR request without supporting documentation if the absence is less than 3 days in duration and is not for a final exam/final assessment. Absences more than 3 days in duration and those that involve a final exam/final assessment, always require documentation. Students must notify their faculty/contract lecturer once a request for academic consideration is submitted. See Senate Policy 167: Academic Consideration.
  Longer absences are not addressed through Policy 167 and should be discussed with your Chair/Director/Program to be advised on next steps.
- If taking a remote course, familiarize yourself with the tools you will need to use for remote learning. The Remote Learning Guide for students includes guides to completing quizzes or exams in D2L Brightspace, with or without Respondus LockDown Browser and Monitor, using D2L Brightspace, joining online meetings or lectures, and collaborating with the Google Suite.
- FAQs Academic Considerations and Appeals
- Information on Copyright for Faculty and students.
- Information on Academic Integrity for Faculty and students.

Accessibility

- At Toronto Metropolitan University, we are committed to ensuring that all courses are accessible to everyone and to removing barriers that may prevent some individuals from enrolling in courses.
- All technologies and tools used in this course are accessible.
- Students who discover an accessibility barrier with any of the course materials or technologies should contact their faculty/contract lecturer.
- As outlined in Policy 159: Academic Accommodation of Students with Disabilities, students are required to proactively consult with AAS, the faculty/contract lecturer, Department or Faculty, as soon as feasible, including prior to enrolling in a course or program, on any concerns they may have about their ability to meet the essential academic requirements of a course/program.

Academic Accommodation Support

Academic Accommodation Support (AAS) is the university's disability services office. AAS works directly with incoming and returning students looking for help with their academic accommodations. AAS works with any student who requires academic accommodation regardless of program or course load.

- Learn more about Academic Accommodation Support.
- Learn how to register with AAS.
- Learn about Policy 159: Academic Accommodation of Students with Disabilities

Academic Accommodations (for students with disabilities) and Academic Consideration (for students faced with extenuating circumstances that can include short-term health issues) are governed by two different university policies. Learn more about Academic Accommodations versus Academic Consideration and how to access each.

Wellbeing Support

At Toronto Metropolitan University, we recognize that things can come up throughout the term that may interfere with a student's ability to succeed in their coursework. These circumstances are outside of one's control and can have a serious impact on physical and mental well-being. Seeking help can be a challenge, especially in those times of crisis.

If you are experiencing a mental health crisis, please call 911 and go to the nearest hospital emergency room. You can also access these outside resources at anytime:

- Distress Line: 24/7 line for if you are in crisis, feeling suicidal or in need of emotional support (phone: 416–408–4357)
- Good2Talk: 24/7-hour line for postsecondary students (phone: 1-866-925-5454)
- Keep.meSAFE: 24/7 access to confidential support through counsellors via My SSP app or 1-844-451-9700

If non-crisis support is needed, you can access these campus resources:

- Centre for Student Development and Counselling: 416-979-5195 or email csdc@torontomu.ca
- Consent Comes First – Office of Sexual Violence Support and Education: 416-919-5000 ext 3596 or email osvse@torontomu.ca
- Medical Centre: call (416) 979-5070 to book an appointment

We encourage all Toronto Metropolitan University community members to access available resources to ensure support is reachable. You can find more resources available through the Toronto Metropolitan University's Wellbeing Central website.