DALHOUSIE UNIVERSITY

School of Information Management
INFO 6513 Business Analytics and Data Visualization
Winter 2020/2021

Course Type (e.g. F2F, online, blended): Online and asynchronous, with synchronous options (see Instructional Methods)
Instructor: Colin Conrad
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E-mail: Colin.Conrad@dal.ca
Preferred method of contact: Microsoft Teams for all technical questions, Email for other questions
Office hours: By appointment only, using email or MS Bookings (link here)
Course website: Brightspace
Tutorials: To be determined (by popular choice)
Teaching Assistant name/contact info: TBA

ABOUT YOUR INSTRUCTOR

Colin Conrad, Ph.D. | Assistant Professor
School of Information Management
Dalhousie University

Website: https://colinconrad.com

How to get in touch with me: I check and respond to emails at least once daily between 9 am and 10:30 am Atlantic time (though often more frequently) every weekday. I try hard to respond all emails within 48 hours. In addition, I will regularly check on MS Teams to answer questions and participate in the discussion, though will try to limit my activity on Teams to certain days of the week. If you would like to schedule a one-on-one meeting, please reserve a time using the MS Bookings app or email me to schedule a time.

COURSE DESCRIPTION

This course provides an introduction to Business Analytics using state of the art technologies. It covers the processes, methodologies and practices used to transform data into useful information to support business decision-making. Business analytics requires foundational knowledge in data Extraction, Transformation and Loading (ETL). The course will cover data models for data warehouses and in-memory data management systems. Students will learn how to extract and manipulate data from these

systems. They will also acquire basic knowledge of data mining and predictive analytics. The students will also learn to build dashboards using a variety of data design and visualization tools. The course will be made up of a combination of conceptual and applied topics with classes being virtually held via asynchronous lectures and synchronous office hours to help their hands-on exercises with step-by-step hands-on tutorials. Both cloud-based and on-premise technologies will be leveraged to analyze data from a variety of sources, including Open Data, SAP BW, and SAP HANA. Technologies to be used will be focused on end-user analytics and data visualization and will include state of the art tools for self-serve business analytics such as MS Excel, SAP Lumira Discovery, SAP Cloud Analytics, Tableau, SAP Business Objects Analysis, IBM Cognos Insight (if available), SAP Predictive Analytics, Tableau Public, and SAP HANA.

COURSE PRE-REQUISITES

INFO 5590, BUSI 5512 or permission from the instructor.

LEARNING OBJECTIVES

This course will prepare students to conduct business analysis using some of the industry-leading tools. The instruction is designed to be very hands-on, and will help students become familiar with best practices and gain hands-on experience to help prepare them for a career that leverages business analytics.

LEARNING OUTCOMES

Upon completion of the course, students are expected to have gained basic knowledge or proficiency in the following areas:

1. Have an understanding of business analytics tools and how businesses use them;
2. Extract, manipulate and transform data from different sources;
3. Perform some basic data mining and analysis;
4. Generate reports, design dashboards and other visualizations;
5. Apply different concepts and skills in various business contexts using case studies and hands-on exercises with leading software applications.

TECHNOLOGY USED

We will use a large number of software packages in this course. Some of the software will not be compatible with your computer (especially if you own a Mac). If you have trouble accessing the software, you can remotely log onto the computers in the Rowe building (rooms 3080 and 4055) using Dalhousie RLab. You can learn more about accessing RLab here. We will also have a video to help you connect to RLab.

- Microsoft Excel (This should be available to you though Dalhousie and RLab)
- SAP Lumira Discovery (Students can install this on Windows or access with RLab)
- SAP Business Objects Analysis (Students can install this on Windows or access with RLab)
- IBM Cognos Insights (Students can install this on Windows or access with RLab)

- SAP Crystal Reports (Students can install this on Windows or access with RLab)
- Tableau Public (You can install this on Windows or Mac)
- SAP Predictive Analytics (Students can install this on Windows or access with RLab)
- SAP Lumira (Design) Studio Students can install this on Windows or access with RLab)
- Other tools such as SAP Analytics Cloud or SAP HANA are on the cloud and do not require installation.

INSTRUCTIONAL METHODS

All class lectures are provided online asynchronously and can be accessed through your Brightspace account and are released at 8:00 am on each Monday at the beginning of the week. All course deliverables will be due on 11:55 pm on a Friday. You will also have the option to attend a live help session held at a popular time determined early in the semester.

In Dalhousie's MI program, students come from many diverse backgrounds and may not have deep experience with technology. You are not expected to be a technical expert and need not be an expert to perform well in this course. The goal of this course is to introduce students to the skills required to be effectively use and manage information technologies that are used in most organizations (whether they be non-profit, government, or private). Students who do well in this course nonetheless consistently demonstrate an openness to synthesising hands-on experience with managerial considerations that are relevant to their interests or career context.

LEARNING MATERIALS

You must acquire the following textbook, such as through this website:

Kale, N. and Jones, N (2020). *Practical Analytics*. Epistemy Press.

The following textbooks have only one chapter assigned, but can be downloaded for free using the links provided:

Van Ommeren, E., Duivestein, S., Bloem, J., van Doorn, M and van Manen., T. (2013). *NO MORE SECRETS with Big Data Analytics*. Sogeti.

Ballard, C., Farrell, D. M., Gupta, A., Mazuela, C. and Vohnik, S. (2006). *Dimensional Modeling: In a Business Intelligence Environment*. IBM Redbooks.

METHODS OF EVALUATION

Detailed instructions regarding each assignment will be provided. Assessment of all assignments is directly related to attention to the instructions, clarity of expression and presentation, and evidence of significant analysis and reflection.

See also the SIM Grading Policy.

COMPONENT	DETAILS	DUE DATES	VALUE
BA Toolkit Portfolio	A toolkit featuring your use of the various lab tools and the in-class exercises given. The final portfolio consists of an executive summary and 7 portfolio chapters. Each chapter consists of 4-6 professional looking single-spaced pages with between 4 and 8 annotated screenshots featuring the work that you did. There are three components to this assignment: • Portfolio Chapters 1-2 Draft (10% of final grade) • Portfolio Chapters 3-5 Draft (15% of final grade) • Finished BI Toolkit Portfolio (25% of final grade)	Feb 5th; Mar 5th; Apr 9th	50%
Group Project	The goal of the group project is to seek out and compare different tools with the ones covered in class. This project will consist of an asynchronous recorded group presentation delivered at the end of the semester, as well as a brief 3000-4000 word report which describes the insights from the tools. • Group project proposal (5% of final grade) • Group project brief report (10% of final grade) • Group project presentation (25% of final grade)	Jan 29th; Mar 26th	40%
Online Quizzes	There will be 2 online quizzes covering material from the textbook. Each quiz will be designed to be 15 minutes long and consist of a combination of true/false questions, multiple choice and multi-section questions. You will have a one week window to complete the quiz.	Feb 12th; Apr 2nd	10%

INTEGRATION OF MI COMPETENCIES

PROGRAM COMPETENCY	COURSE LEARNING OUTCOME	COURSE ASSESSMENT
Information Management Leadership	5	IP
User-centred Information Services	1, 2, 4, 5	WCE, IP

Management of Information Technology	1, 2, 3, 4, 5	WCE, IP
Research and Evaluation	2, 3, 4	WCE, IP
Risk Management	5	IP
Change Management	4, 5	IP
Workplace Skills & Attributes:	1, 2, 3, 4, 5	WCE, IP

CLASS POLICIES

Attendance

Class attendance is required in all MI courses and is included in the weekly class exercises mark.

Citation Style

SIM courses use APA as the default standard citation style. Unless the instructor provides alternative written instructions, please use the APA citation style in your assignments to briefly identify (cite) other people's ideas and information and to indicate the sources of these citations in the References list at the end of the assignment. For more information on APA style, consult Dalhousie Library website at https://libraries.dal.ca/help/style-guides.html or the APA's Frequently Asked Questions about APA

Late penalties for assignments

A penalty for late assignments will be assessed, unless prior permission has been given by the instructor to submit an assignment late, which normally will be for extended illness, medical, or family emergencies only (see below). Late submissions will be assessed a penalty of five percent per day, including weekends. Assignments will not normally be accepted seven days or more after the due date; in such cases the student will receive a grade of zero.

Missed or Late Academic Requirements due to Student Absence:

Dalhousie University recognizes that students may experience short-term physical or mental health conditions, or other extenuating circumstances that may affect their ability to attend required classes, tests, exams or submit other coursework.

Dalhousie students are asked to take responsibility for their own short-term absences (3 days or less) by contacting their instructor by phone or email prior to the academic requirement deadline or scheduled time **AND** by submitting a completed Student Declaration of Absence form to their instructor in case of missed or late academic requirements. Only 2 separate Student Declaration of Absence forms may be submitted per course during a term (note: faculty, college, school, instructor or course-specific guidelines may set a lower maximum).

SIM GRADING POLICY

A+	90-100	Demonstrates original work of distinction.
A	85-89	Demonstrates high-level command of the subject matter and an ability for critical analysis.
A-	80-84	Demonstrates above-average command of the subject matter.
B+	77-79	Demonstrates average command of the subject matter.
B	73-76	Demonstrates acceptable command of the subject matter.
B-	70-72	Demonstrates minimally acceptable command of the subject matter.
F	<70	Unacceptable for credit towards a Master's degree.

ACCOMMODATION POLICY FOR STUDENTS

Students may request accommodation as a result of barriers experienced related to disability, religious obligation, or any characteristic protected under Canadian human rights legislation.

Students who require academic accommodation for either classroom participation or the writing of tests and exams should make their request to the Advising and Access Services Center (AASC) prior to or at the outset of the regular academic year. Please visit www.dal.ca/access for more information and to obtain the Request for Accommodation form.

A note taker may be required as part of a student's accommodation. There is an honorarium of $75/course/term (with some exceptions). If you are interested, please contact AASC at 494-2836 for more information or send an email to notetaking@dal.ca.

Please note that your classroom may contain specialized accessible furniture and equipment. It is important that these items remain in the classroom, untouched, so that students who require their usage will be able to fully participate in the class**.**

ACADEMIC INTEGRITY

In general:
The commitment of the Faculty of Management is to graduate future leaders of business, government and civil society who manage with integrity and get things done. This is non-negotiable in our community and it starts with your first class at Dalhousie University. So when you submit any work for evaluation in this course or any other, please ensure that you are familiar with your obligations under the Faculty of Management's Academic Integrity Policies and that you understand where to go for help and advice in living up to our standards. You should be familiar with the Faculty of Management Professor and Student Contract on Academic Integrity, and it is your responsibility to ask questions if there is anything you do not understand.

Dalhousie offers many ways to learn about academic writing and presentations so that all members of the University community may acknowledge the intellectual property of others. Knowing how to find, evaluate, select, synthesize and cite information for use in assignments is called being "information literate." Information literacy is taught by Dalhousie University Librarians in classes and through Dalhousie Libraries' online Citing & Writing tutorials.

Do not plagiarize any materials for this course. For further guidance on what constitutes plagiarism, how to avoid it, and proper methods for attributing sources, please consult the University Secretariat's Academic Integrity page.

Please note that Dalhousie subscribes to plagiarism detection software that checks for originality in submitted papers. Any paper submitted by a student at Dalhousie University may be checked for originality to confirm that the student has not plagiarized from other sources. Plagiarism is considered a very serious academic offence that may lead to loss of credit, suspension or expulsion from the University, or even the revocation of a degree. It is essential that there be correct attribution of authorities from which facts and opinions have been derived. At Dalhousie, there are University Regulations which deal with plagiarism and, prior to submitting any paper in a course; students should read the Policy on Academic Dishonesty contained in the Calendar.

Furthermore, the University's Senate has affirmed the right of any instructor to require that student assignments be submitted in both written and computer readable format, e.g.: a text file or as an email attachment, and to submit any paper to a check such as that performed by the plagiarism detection software. As a student in this class, you are to keep an electronic copy of any paper you submit, and the course instructor may require you to submit that electronic copy on demand. Use of third-party originality checking software does not preclude instructor use of alternate means to identify lapses in originality and attribution. The result of such assessment may be used as evidence in any disciplinary action taken by the Senate.

Finally:
If you suspect cheating by colleagues or lapses in standards by a professor, you may use the confidential email: ManagementIntegrity@dal.ca which is read only by the Assistant Academic Integrity Officer.

Faculty of Management clarification on plagiarism versus collaboration:

There are many forms of plagiarism, for instance, copying on exams and assignments. There is a clear line between group work on assignments when explicitly authorised by the professor and copying solutions from others. It is permissible to work on assignments with your friends but only when the professor gives you permission in the specific context of the assignment. University rules clearly stipulate that all assignments should be undertaken individually unless specifically authorised.

Specific examples of plagiarism include, but are not limited to, the following:

- Copying a computer file from another student, and using it as a template for your own solution
- Copying text written by another student
- Submitting the work of someone else, including that of a tutor as your own

An example of acceptable collaboration includes the following:

- When authorised by the professor, discussing the issues and underlying factors of a case with fellow students, and then each of the students writing up their submissions individually, from start to finish.

UNIVERSITY STATEMENTS

ACCESSIBILITY

The Advising and Access Centre serves as Dalhousie's Centre for expertise on student accessibility and accommodation. Our work is governed by Dalhousie's Student Accommodation Policy, to best support the needs of Dalhousie students. Our teams work with students who request accommodation as a result of: disability, religious obligation, an experienced barrier related to any other characteristic protected under Canadian Human Rights legislation.

STUDENT CODE OF CONDUCT

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

DIVERSITY AND INCLUSION

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality.

Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2).

RECOGNITION OF MI'KMAQ TERRITORY

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory.

The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit the office in the McCain Building (room 3037) or contact the programs at elders@dal.ca or 902-494-6803 (leave a message).

COURSE SCHEDULE

Date of Class	Topics	Required Readings and Material
Week of Jan 6th	Course Introduction	Required Readings: None. Weekly Lab Exercises: Excel Pivot Tables.
Week of Jan 11th	Overview of Analytics and Data Wrangling	Required Readings: *Practical Analytics* Chapters 1 and 2. Weekly Lab Exercises: Open Data Wrangling with SAP Lumira Discovery.
Week of Jan 18th	Data Modelling & ETL	Required Readings: *Practical Analytics* Chapters 3 and 4. Weekly Lab Exercises: SAP BusinessObjects Analysis for MS Office.

Week of Jan 25th	Data Cubes, Data Processing (OLAP)	Required Readings: *Practical Analytics* Chapter 5. *IBM Redbook* Chapter 4. Weekly Lab Exercises: SAP Lumira Discovery; IBM Cognos Insight.
Week of Feb 1st	Business Reporting and Performance Measurement	Required Readings: *Practical Analytics* Chapter 6. Weekly Lab Exercises: SAP Analytics Cloud; SAP Crystal Reports.
Week of Feb 8th	Dashboards and Visualization Pt. 1	Required Readings: *SAPL Data Visualization Handbook*. Weekly Lab Exercises: Tableau Basics and Dashboard; Data Manipulation for Analysis using Tableau.
Week of Feb 15th – WINTER STUDY BREAK – NO CLASS		
Week of Feb 22nd	Dashboards and Visualization Pt. 2	Required Readings: *Practical Analytics* Chapter 7. Weekly Lab Exercises: SAP Predictive Analytics for Visualization; SAP Lumira (Design) Studio.
Week of Mar 1st	Text, Web, and Social Analytics	Required Readings: Materials provided on Brightspace. *No More Secrets* Part III: Big Social – Predicting Behaviour with Big Data (pp. 87-127). Weekly Lab Exercises: Facebook Analytics (Demo); Text Mining Analysis with Wine Data
Week of Mar 8th	Data Mining and Big Data Analytics	Required Readings: *Practical Analytics* Chapters 8 and 9. Weekly Lab Exercises: SAP Predictive Analytics with SAP HANA Data; SAP Predictive Analytics for Data Mining.
Week of Mar 15th	Data Mining with In-Memory Technologies	Required Readings: *Practical Analytics* Chapters 10 and 11. Weekly Lab Exercises: SAP HANA In-Memory Exercise; Graph Processing.
Week of Mar 22nd	GIS & Emerging Trends in Business Analytics	Required Readings: A Tutorial on Geospatial Information Systems. Weekly Lab Exercises: Geospatial Analytics with SAP Lumira Discovery.
Week of Mar 29th	Project Presentations	Required Readings: None. Weekly Lab Exercises: None.