

University of Montana College of Business
MBA 655 (Section 60) – Business Data Analytics (3 credits)

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meets: asynchronously online except for the final exam, which is Friday, June 11 from 8am to noon

This course exposes students to key terminology and concepts of data analytics as well as basic technical and statistical tools used by practitioners. Content will be delivered online through Moodle as lectures, assigned readings and exercises. For pioneering much of that content, I owe thanks and credit to Jason Triche, whose work informs this course significantly.

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COB and MSBA Mission Statement and Assurance of Learning

The College of Business (COB) at the University of Montana creates transformative, integrated, and student-centric learning experiences, propelling our students to make immediate and sustained impact on business and society. We nurture our students' innate work ethic to develop confident problem solvers and ethical decision makers. We pursue thought leadership and collectively create opportunities for a better life for our students, faculty, and staff.

COB Core Values:

- Students first: We educate the whole person
- Experiential learning: We create experiences that matter
- Thought leadership: WE create rigorous and relevant knowledge
- Stewardship: We value people, planet and profit

The mission statement for the MS in Business Analytics program is as follows:

The MS in Business Analytics prepares graduates for successful careers working with data across a wide range of organizations. Students build a strong foundation at the intersection of business, statistics, and computing. In addition to a firm grounding in analytical techniques and applications, students gain the ability to effectively communicate and use the results of data analytics for innovative solutions to catalyze business growth. Graduates are deeply engaged with the private and public sector, acquiring relevant skills to provide immediate value to employers.

As part of our assessment process and assurance-of-learning standards, the MSBA program has adopted five learning goals for our students.

The MS in Business Analytics graduates will possess:

1. **Knowledge:** A deep understanding of a wide range of analytical techniques and programming tools for both structured and unstructured (e.g., text, sentiment) data.
2. **Application:** The ability to apply appropriate analytical techniques to solve a wide variety of business/organizational problems.
3. **Communication/Story Telling:** The ability to effectively: (a) communicate data analytics results and translate these into effective business decision making inputs; (b) use data visualization techniques to illustrate results and implications; and (c) write an impactful narrative supporting key insights and implications from an analysis.
4. **Ethics/Data Stewardship:** The ability to act as effective data stewards, applying governance techniques to secure data, to develop and promote policies for using data in an ethical manner, to respect data privacy considerations, and to enforce data compliance.
5. **Innovation:** The ability to innovate beyond providing answers to existing questions and solutions to known problems by harnessing data analytics to identify new sources of value, to see patterns and anomalies, and to reveal new insights.

Business Data Analytics Course Learning Goals

Students will

- Understand the terminology used in the Big Data field of study.
- Explore the applications of Big Data in a variety of disciplines.
- Use, at an introductory level, data analytics tools.
- Explain the story told by the output of the data analyses.
- Discuss the issues of privacy and ethics raised by the use of Big Data tools.

Readings (and required textbook)

Big Data: A Revolution That Will Transform How We Live, Work, and Think (2014) by Viktor Mayer-Schönberger and Kenneth Cukier is a required text. Remaining readings will be available as files or links posted in Moodle.

Assessment

Assessment will be conducted through homework, quizzes, exams and a final project, weighted as shown when determining a final grade for this course:

<i>Exam</i>	25%
<i>Project</i>	25%
<i>Homework</i>	40%
<i>Reading Quizzes</i>	10%

Numerical scores translate to letter grades as follows:

A	93% and above
A-	90% to 92%
B+	87% to 89%
B	83% to 86%
B-	80% to 82%
C+	77% to 79%
C	73% to 76%
C-	70% to 72%
D+	67% to 69%
D	63% to 66%
D-	60% to 62%
F	Below 60%

Assignments

Homework: When homework is assigned, as it will be throughout the semester, the assignment will specify if the homework must be completed individually or may be completed with a group. If you opt for group work, be sure each member of the group understands each element of the assignment; exams will be individual exercises. **Late assignments will not be accepted and will receive a grade of 0.**

Homework must be formatted according to the guidelines posted on Moodle. Homework will cover concepts and skills from lectures and may take hours to complete.

Exam: The exam will include questions in a variety of formats – short answer, multiple choice and essay questions. The exam will be available on Moodle from 8am to noon on Friday, June 11. **Please make arrangements to be available during the scheduled exam time.**

Project: There will be a class project assigned that requires employing the concepts and techniques covered in the course. The project will be completed in groups assigned by the instructor.

Quizzes: Brief quizzes will measure comprehension of assigned reading material. Quizzes should be completed individually. Moodle will enforce a time limit so expect to complete the quiz in one sitting.

Policies

Accommodation for People with Disabilities Available

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you have a disability that adversely affects your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or 406.243.2243. Regardless of your registration status, I will work with you and Disability Services to provide an appropriate modification.

Academic Honesty and Code of Conduct

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. The University of Montana Student Conduct Code specifies definitions and adjudication processes for academic misconduct and states, “Students at the University of Montana are expected to practice academic honesty at all times.” (Section V.A., available at www.umt.edu/student-affairs/dean-of-students/default.php). All students need to be familiar with the Student Conduct Code. It is the student’s responsibility to familiarize themselves with the COB Code of Professional Conduct at www.business.umt.edu/ethics/professional-conduct-code.php.

Emergency Procedures

In the event of a campus emergency during class, please follow instructions provided by your instructor or the UM emergency alert system. Failure to do so could hamper efforts to resolve the emergency situation in a safe, timely manner. A video explaining UM emergency procedures can be found here:

https://www.youtube.com/watch?v=iZ_9_Oj9ec4

Participation

All students are expected to view course content and complete work as the class schedule outlines. Please notify me at the earliest opportunity by Teams or email if circumstances impact your ability to keep up.

Brief and occasional lapses for reasons of illness, injury, family emergency, religious observance, cultural or ceremonial events, or participation in a University sponsored activity may be excused. Lapses for reasons of

military service or mandatory public service shall be excused. Full details on UM's attendance policy can be found here: <https://catalog.umt.edu/academics/policies-procedures>

Online Communication and Expectations of Availability

Like many workplaces, UM's MS Business Analytics program, for which this course is preparation, uses Microsoft Teams for a substantial amount of communication. You should have received an email invitation at your university email address to join the UMT Analytics Team on May 5. There are open channels on general topics including job postings as well as a dedicated Intro to Business Data Analytics channel which can be used for questions, discussion and self-rescue. I appreciate it if you leave some relic (like a brief comment or emoticon) of having read announcements. I'll reciprocate.

For communication to me, you may send direct messages through Teams or email. You can expect a response within 24 hours, often the same day. If I email with information, I will mention the email in Teams.

In general, I expect you to monitor your official email address and Teams on a more-or-less daily basis during the course. If you expect to be out of touch for an extended period, please let me know so I am aware that you might miss any communication in the interim.

Class Schedule

Date	Week	Topic	Assignment Due Dates
May 10	Week 1	Introduction to Big Data, Data Analytics, and Business Intelligence	
	Week 1	Exploring Data – Descriptive Statistics	
	Week 1	Exploring Data – Dealing with Missing, Incorrect Data, and Outliers	Homework #1, #2 Reading Quiz #1 Due Monday 5/17 at 8am
May 17	Week 2	Relational Databases – ERD	
	Week 2	Relational Databases – Relational Schemas	
	Week 2	Database - SQL	Homework #3, #4 Reading Quiz #2 Due Monday 5/24 at 8 am
May 24	Week 3	Introduction to R, Imputing missing values	
	Week 3	Hypotheses Testing, T-test and correlation	
	Week 3	Linear Regression	Homework #5, #6 Reading Quiz #3 Due Monday 5/31 at 8am
May 31	Week 4	ANOVA Classification Trees Clustering Association Analysis	Homework #7, #8 Reading Quiz #4 Due Monday 6/7 at 8am
June 7	Week 5	Data Ethics	
	Week 5	Data Visualization Tableau	Homework #9, #10, #11 Reading Quiz #5 Due Monday 6/14 at 8am
June 11	Week 5	EXAM - 8 am to noon (Mountain Time)	
June 14	Week 6	Project	Project Due Friday, 6/18 at noon

Note: The assignment numbers and due dates may change during the semester but, if so, will move in the direction of allowing more time.