



Business Analytics
6500:305-502 (3 credits)
Fall 2018

Instructor Information	Class Information
Kevin Bliler, MBA	Class Location: ONLINE
Email: kbliler@uakron.edu	Date: 27 aug – 07 dec 2018
Office: CBA 357	Time: ONLINE
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Office Hours: Wed 11am-2pm, 4-7pm , and by appointment.	

Course Information

Description

Studies core statistical techniques; data retrieval, analysis and mining; and decision modeling to effectively persuade in the project-oriented world of data-driven decisions.

Prerequisites

6500:304 (Business Statistics)

Overview

Welcome to the exciting frontier of business analytics and big data! Over the next few months students will have the chance to further develop and demonstrate their business skills (both technical and communicative) in this scope.

The general work-flow of this course begins with division into topics and modules; an index of modules follows this section. Each module will correspond to approximately one week of class, and consist of the following components:

1. student's preparatory reading of text/posted materials
2. multimedia discussion of topic
3. multimedia demonstration of topic and lab in JMP
4. completion and submission of topic's JMP lab assignment

Students will also be evaluated on their ability to work together with fellow simulated business team members to perform appropriate analysis and produce a corresponding business report for a simulated business project scenario throughout the course.

The successful BA student is one who makes an initial decision to invest the time and work needed **at the right time** in order to keep up with the course flow. The learning elements of the course have been designed to provide students with all of the needed tools to succeed in the course, with sufficient (not excessive) investment of time and work. Students are always welcome and encouraged to contact the instructor for further help or advice with the course.

This course is supported by The University of Akron's learning management system called Brightspace. If you are new to Brightspace, you can [get started by watching the tutorials here](#).

Objectives

1. Expose you to visualization, supervised learning and unsupervised learning techniques that are used in a data empowered business strategy
2. Extend your knowledge of business statistics
3. Apply what you learn in this class to what you do at work, now or in the future.
4. Develop skills that are required to transform data into actionable intelligence & decision-making
5. Enhance your written communication, creative thinking, problem solving, and analytical skills

At the end of this course, successful students will be able to:

1. describe key concepts in business and data analytics
2. explain how business analytics differs from business intelligence and data mining
3. write a justification why organizations are actively adopting business analytics for strategic advantage
4. differentiate between information, insight and knowledge
5. apply appropriate statistical (basic analytics) concepts using analytic software
6. utilize data mining techniques on large data sets to answer business questions
7. analyze output from statistical and data mining procedures
8. write conclusions and recommendations based on relevant statistical and data mining output
9. communicate the results of data analysis by writing a detailed report
10. identify the specific ethical issues that arise when utilizing statistical and data mining techniques

College of Business Administration Objectives

This course is part of the CBA core, and as such, it shares these learning objectives:

- Master integrated business knowledge
- Analyze data using quantitative techniques
- Be informed decision makers
- Develop leadership and collaboration competencies
- Use writing and oral communication skills to persuade and to mobilize action
- Demonstrate a global perspective and cross-cultural awareness
- Recognize and understand how to address ethical concerns

Course Materials

Required Textbook:

Data Mining for Business Analytics: Concepts, Techniques, and Applications with JMP Pro by Galit Shmueli, Peter C. Bruce, Mia L. Stephens, Nitin R. Patel, Wiley Publishing, 2017, ISBN 9781118877432 (hardcopy), ISBN 9781118877524 (ebook)

An index of readings (textbook and other) will be maintained as a separate file posted on Brightspace and updated throughout the course.

“Clarification Please/Helpful Hints” discussion areas are available throughout the semester. These are places for you to post questions and answers about the course (including the JMP software). Answers to questions posed in the “Clarification Please” and “Helpful Hints” discussion areas will be eligible for extra credit points at the discretion of the instructor.

Additional Resources (if any)

Supplemental Textbook (recommended):

Fundamentals of Predictive Analytics with JMP, by Ron Klimberg & B.D. McCullough, SAS press, 2013, ISBN 978-1-61290-425-2. An electronic version of the Klimberg & McCullough text can be found online through UofA libraries at:

<http://library.uakron.edu/record=b4525456~S24>

We will be using the powerful and user-friendly analytical software package JMP 14 Pro, published by SAS. JMP is available on all CBA lab computers and can also be downloaded by current CBA students (at no charge) from *myAkron→Technology→Home Use Software Downloads*.

We will also be using various articles, videos, and other materials with links posted on Brightspace.

Instructor Contact and Reply Policy

Email is the preferred method of communication for this course. Students should expect a response to emails within 24 hours on weekdays and 48 hours for a weekend or over a holiday. Submitted assignments will normally be evaluated and returned within one week.

Evaluation and Assessment

Index of Course Modules

Module 1: Introduction	
1.1 Introduction to Business Analytics and Big Data	
Module 2: Business Analytics Life Cycle	
2.1 Business Analytics Process	
2.2 Ethical and Privacy of Data Issues	
Module 3: Data & Basic Analytics	
3.1 Data: Concepts, Cleansing, Exploration & Visualization	
3.2 Statistical Testing with JMP: T-test, ANOVA, and Chi-Square	
Module 4: Advanced Analytics	
4.1 Correlation & Linear Regression Analysis	
4.2 Logistic Regression	
4.3 Model Comparison	
4.4 Decision Tree	
4.5 Cluster Analysis	
4.6 Neural Networks	

Grading

Final grades are based on the total points earned from a maximum of 1000 course points. Individual assignment point values appear in the following table. Letter grades are assigned per the course grading scale (given below).

Grade Component	Points	% of Final Grade	
JMP labs (7 @ 40 points each)	280	28%	
Discussion Posts (4 @ 25 points each)	100	10%	
Team project (visualization, statistics, linear regression, logistic regression, decision tree, model comparison)	210	21%	
Quizzes	60	6%	
Midterm exam	150	15%	
Final exam	200	20%	
Total points:	1000	100%	
BStat assessment quiz (up to 30 bonus points)	30	≤ 3% <i>bonus</i>	

Grade Component Description

JMP labs. A total of seven labs utilizing the JMP software will be assigned during the semester. While collaborative work among several students on lab assignments is permitted and encouraged (see following guidelines), each lab is to be completed and submitted on an individual basis. All JMP labs are due at 11:59pm on the assigned day. Please refer to upcoming “*Late Assignments*” section for policy on late submission.

Discussion Posts. Students will be asked to participate in several online discussions of current Business Analytics topics assigned by the instructor. The discussions board in the course’s Brightspace website will be utilized as the online forum.

Further details will be provided with each assignment. Please refer to upcoming “*Late Assignments*” section for policy on late submission.

Team project. Semester-long teams of 3-4 students will be assigned by the instructor. Teams are responsible for assembling and submitting a team contract as well as completing a comprehensive project throughout the course, including an executive summary and well-developed and reported supporting analysis. More details will be provided when the project is assigned. **Late project assignments are accepted with a penalty of 10% per day late.** Peer evaluations (confidential) of team members will be required. Team membership is subject to update at any time by the instructor.

Midterm exam. The midterm exam will be closed book and closed notes. The use of simple or scientific calculators is permitted during the exam (no phones). Exams will consist of multiple choice and true/false questions.

Final exam. The comprehensive final exam will consist of multiple choice and true/false questions and will be closed book and closed notes, with no calculator needed or permitted.

Assessment Quiz. A twenty-question Business Statistics Assessment Quiz will be administered at the end of the second week of classes. You will have one attempt and 30 minutes to take this quiz, worth a maximum of 3% bonus credit.

Quizzes. Several online quizzes will be assigned based on the course materials. You will have two attempts at each quiz, and the higher score will count toward your final grade. The quiz score will be shown after the first and second attempts, and solutions will be provided after the testing period ends. Quizzes are to be completed on an individual basis. A testing period of minimum length 24 hours will be designated for each quiz. No quiz may be started following the end of its testing period.

Grading Scale

Below is the grading scale that will be used in this course:

PERCENT	POINTS	LETTER	PERCENT	POINTS	LETTER
≥ 93 %	≥ 930	A	≥ 73 %	≥ 730	C
≥ 90 %	≥ 900	A-	≥ 70 %	≥ 700	C-
≥ 87 %	≥ 870	B+	≥ 67 %	≥ 670	D+
≥ 83 %	≥ 830	B	≥ 63 %	≥ 630	D
≥ 80 %	≥ 800	B-	≥ 60 %	≥ 600	D-
≥ 77 %	≥ 770	C+	< 60 %	< 600	F

Course Policies and Expectations

Attendance

In order to succeed in this course, regular online participation is required. You should plan to log in to the course at least twice per week.

Exams

The midterm and final exams will be closed book and closed notes and will consist of multiple choice and true/false questions. Both will be administered through Brightspace. Students will have a window of at least 24 hours in which to take each exam using their choice of two testing options: 1) in-person at The University of Akron’s Computer-Based Test Center (Schrack Hall North Room 152), or 2) using your own computer with **Respondus Monitor Lockdown Browser**. Please note that this option requires a webcam (and your permission for the software to observe you while testing), and it must be downloaded prior to use. Further instructions for using **Respondus** are available on the course Brightspace page.

Participation

You are expected to participate in this course as follows:

- You are responsible for completing and submitting all assignments to the appropriate Brightspace drop box before the due date. You are responsible for clearly labeling your papers and files to identify your submission. You are also responsible for submitting files in a specific format, such as .docx, or .pdf. Note that the University provides a Google Apps account to all students, and you can use Google Apps to create files in these file types.
- You are responsible for maintaining copies of your work and verifying that your Dropbox submission has been received. You will receive an email confirmation when you submit assignments. You will be also able to track your submissions in Brightspace.
- You are responsible for completing all homework and assignments before the due date.
- Technical challenges are not an acceptable excuse for missing deadlines. You must ensure that you have access to a working computer at all times. Please do not wait until the deadline to submit assignments.
 - If you do experience any technical issues, please contact the UA I.T. Help Desk (330-972-6888) and ensure that the issue is tracked through the Footprints ticketing system.

If you have any questions or concerns about any of the assignments or your performance, please contact me immediately. Do not wait until the assignment is due or your performance cannot be rectified.

Electronic Devices

A calculator will be useful for some operations and should be kept handy. Calculators (no cell phones) will be needed for the midterm exam.

Late Assignments

Late *Lab* or *Discussion Post* assignments are not accepted without a reasonable basis. Students seeking to submit an assignment past its deadline should complete and submit an *Assignment Deadline Extension Request* form to the instructor as soon as possible. This form is available on the course Brightspace webpage. Do not wait until right before the due date to submit course assignments. In exceptional circumstances (Brightspace website down for extended period, etc.) assignment due dates may be extended for the entire class.

Team case assignments will be penalized 10% if late, with an additional 10% for each additional 24 hours late. Cases will not be accepted after graded cases have been returned to the class.

A **make-up exam** is available only in exceptional circumstances for students with excused absences and will be considered only if notification of your absence was given prior to the test (whenever possible), and documentation of your absence is provided before or after the test.

Online Etiquette

Online etiquette, sometimes called Netiquette, takes special attention because it lacks the visual cues that we rely on to give meaning to communication. Some important suggestions and guidelines to keep in mind are ...

1. Avoid language that may come across as strong or offensive. Language can be easily misinterpreted in written communication. If a point must be stressed, review the statement to make sure that you would not be offended; then post the statement. Humor and sarcasm may easily be misinterpreted, so try to be as matter-of-fact and professional as possible.
2. Keep writing to a point and stay on topic. Online courses require a lot of reading. When writing, keep sentences focused and brief so that readers do not get lost in wordy paragraphs and miss the point of the statement. Also, do not introduce new topics; it may just confuse the readers.
3. Read first, write later. It is important to read all posts or comments before personally commenting to prevent repeating commentary or asking questions that have already been answered.

4. Review, review, then send. There's no taking back a comment that has already been sent, so it is important to double-check all writing to make sure that it clearly conveys the exact intended message.
5. An online classroom is still a classroom. Though the courses may be online, appropriate classroom behavior is still mandatory. Respect for fellow classmates and the instructor is as important as ever.
6. The language of the Internet. Do not write using all capital letters, because it will appear as shouting. Also, the use of emoticons can be helpful to convey nonverbal feelings (example: :-) or :-(), but avoid overusing them.
7. Consider the privacy of others. Ask permission prior to giving out a classmate's email address or other information.
8. If possible, keep attachments small. If it is necessary to send pictures, change the size to an acceptable 100k.
9. No inappropriate material. Do not forward virus warnings, chain letters, jokes, etc. to classmates or instructors. The sharing of pornographic or insensitive material is forbidden.

Basic Technology

You must have access to a computer capable of accessing and handling Brightspace (including uploading papers, streaming listening excerpts, and taking quizzes and exams.) This is available through the CBA student computer lab, or through one's own laptop or PC. It is strongly recommended that your computer have a **webcam**, and the ability to download and run the JMP Pro 14 software through "My Akron" (see JMP resources folder on Brightspace.) Beyond that, there are no special technological requirements for this course.

Withdrawal Policy

- A student may drop a course through the 14th calendar day of a semester or proportionately equivalent dates during summer sessions, intersession and other course terms. A "drop" will not appear on your transcript. The class simply "disappears."
- After the 14th calendar day period, students may withdraw from a course through "**My Akron**" until the 49th calendar day of a semester or proportionally equivalent dates during summer session, intersession, and other course terms. If you withdraw, a "WD" will appear on your transcript. You should know that *a withdrawal may affect your financial aid, eligibility for on-campus employment and eligibility for insurance*. Speak with your advisor for details.
- A student who leaves a course without completing the coursework and without going through the withdrawal procedure *will be given an "F" for the course*.

Questions regarding your registration can be addressed by the [Office of the Registrar](#), 330-972-5400. [The official University Withdrawal Policy is located here.](#)

For undergraduate students only:

- You must consult your academic advisor:
 - before withdrawing from more than two courses before you have earned 32 credits; and
 - before withdrawing from more than two courses after you have earned 32 credits but before you have earned 64 credits. (This does not count withdrawals that occurred before you earned 32 credits.)
- You may not withdraw from more than four courses before you have earned 64 credits.
- You may not withdraw from the same course more than twice.
- Exceptions may be made for extraordinary non-academic reasons (e.g., medical treatment or convalescence, military service).

Incompletes

An Incomplete grade indicates that the student has completed passing work but that some part of the work is, for good and acceptable reason, not complete at the end of the term. Failure to make up the omitted work satisfactorily by the end of the following term, not including summer sessions, converts the "I" to an "F." When the work is satisfactorily completed within the allotted time the "I" is converted to the grade that the student has earned. Permission to obtain an Incomplete is not common. Talk with your instructor and advisor about your specific situation.

Student Conduct and Community Standards

Academic Integrity

Integrity of scholarship is essential for the university community. The University community is governed by the policies and regulations contained with the Code of Student Conduct and enforced by the Department of Student Conduct and Community Standards. The University of Akron. You can find more information here: www.uakron.edu/studentconduct

It is each student's responsibility to know what constitutes student academic misconduct, and to seek clarification directly from the instructor if necessary. Examples of academic misconduct include, but are not limited to:

- Plagiarism (intentional or unintentional representation of ideas or works of another author or creator, in whole or in part, without properly citing the original source for those ideas or works)
- The use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.
- Use of unauthorized assistance in taking quizzes, tests, or examinations
- Submitting substantially the same work to satisfy requirements for one course or academic requirement that has been submitted in satisfaction of requirements for another course, without permission of the faculty member
- Use of sources prohibited by the faculty member in writing papers, preparing reports, solving problems, or carrying out other assignments
- Inappropriate acquisition and/or improper distribution of tests or other academic materials without the permission of the faculty member.
- Engaging in any behavior specifically prohibited by a faculty member in the course syllabus or during class discussion
- Knowingly furnishing false or misleading information to university officials or faculty members

If a faculty member suspects that a student has violated the Academic Misconduct provision in the Code of Student Conduct, action will be taken as outlined in the Code of Student Conduct.

Any incident of copying/plagiarism of an assignment in this class can be expected to result, at minimum, in an "F" in the class. Every member of an involved team will get the same grade whether they were actively involved with copying/plagiarism or not.

Collaboration Guidelines

In the interest of avoidance of potential ambiguity and misunderstanding, further details are provided to help students understand what degree of collaboration is acceptable within this course:

- Any unique group of several or more words that you use in any submitted assignment that appears anywhere else (any published source, the internet, another team's paper from current or past semester, ...) without proper attribution (citation) represents plagiarism.
 - if there's any question about it, put the content in quotes and sufficiently identify the source (inline or footnote)
- Students are encouraged to help one another and solve problems together on lab-type assignments.
 - When someone asks you for help, you should play the role of a teacher, not a collaborator. You should help the other person discover the answer, thus learning in the process.
- For analytic work requiring written interpretive analysis...
 - It is okay to discuss these with others outside your team before you start writing.
 - Once you are writing the report, you should not consult anyone for help on the substance of the report.
- A high degree of collaboration *within* a team (on a team assignment) is, of course, acceptable and strongly encouraged.

- If you have any questions about plagiarism or the mechanics of doing citations, check out the resource links later in this document, or ask me.

Classroom Behavior

Professional and considerate behavior during class is required. Specific items mentioned in the Code of Student Conduct include:

- Intimidating or threatening behavior
- Disorderly or disruptive behavior
- Disrupting or obstructing the functioning of the University
- Use of an electronic device to make an audio or video recording of someone without consent
- Failure to comply
- Engaging in or threatening physical abuse, verbal abuse, threats, intimidation, harassment, coercion, and/or other conduct which threatens the welfare or safety of any person
- Behavior that the student knew or reasonably should have known would cause a disruption or obstruction of teaching or research

Harassment

The University of Akron is committed to providing an environment free of all forms of discrimination, including sexual violence and sexual harassment. This includes instances of attempted and/or completed sexual assault, domestic and dating violence, gender-based stalking, and sexual harassment. Please know the majority of other University of Akron employees, including faculty members, are considered to be “responsible employees” under the law and are required to report sexual harassment and sexual violence. If you tell me about a situation, I will be required to report it to the Title IX Coordinator and possibly the police. You will still have options about how your case will be handled, including whether or not you wish to pursue a law enforcement or complaint process. You have a range of options available and we want to ensure you have access to the resources you need. Additional information, resources, support and the University of Akron protocols for responding to sexual violence are available at uakron.edu/Title-IX.

Technical Support

If you have computer or software questions or require technical assistance, please contact the I.T. Help Desk:

- By Phone: 330-972-6888
- By Email: support@uakron.edu.
- The web site for Zip Support can be found here: <http://www.uakron.edu/helpdesk/>
- Brightspace self-help can be found here:
http://www.uakron.edu/it/instructional_services/dds/Brightspace/Brightspace-student_resources.dot

Academic Support

The Writing Commons, Writing Lab, and Writing Center

The University of Akron provides free assistance to currently enrolled students. Writing help can be obtained in the Bierce Library Writing Commons.

- Information on the Writing Commons and eTutoring can be found here:
http://www.uakron.edu/it/instructional_services/dds/Brightspace/Brightspace-student_resources.dot

Additional Research and Writing Support

UA Library Business & Management Research Guide: http://libguides.uakron.edu/business_management



[Purdue Owl Online Writing Lab](#)

Resources for more details on proper citation/avoiding plagiarism:

[Purdue Owl APA Style Guide](#)
[Purdue Owl – Using research](#)

eTutoring

The University of Akron also offers online tutoring, called eTutoring, which is provided through the Ohio eTutoring Collaborative. Students at The University of Akron have access to online tutoring in Writing, Accounting, Chemistry, Math (through Calculus II), and Statistics. The Online Writing Lab allows you to submit a draft of your paper to a tutor, ask for specific feedback, and receive your work back with a tutor's comments in approximately 24 to 48 hours. You may submit up to three drafts per paper. eChat will allow you to meet with a tutor in one-on-one tutoring sessions via a fully interactive, virtual online environment. Offline questions will allow you to leave a specific question for an eTutor, who will respond within 48 hours (but usually sooner).

- Information on eTutoring can be found here:
<https://www.etutoring.org/login.cfm?institutionid=263&returnPage>

Accessibility

Any student who has a disability that substantially limits learning in a higher education setting may contact [the Office of Accessibility](#) for information regarding eligibility for reasonable accommodations. The office telephone number is (330) 972-7928 (Voice) or (330) 972-5764 (TDD). The office is located in Simmons Hall room 105. No special accommodations will be provided to students unless I have received information from that office.

Other Support

Confidential help is available. If you wish to speak to a professional, in confidence, please contact:

- Rape Crisis Center – www.rccmsc.org – 24 Hour Hotline: 877-906-RAPE Office Located in the Student Recreation and Wellness Center 246 and the office number is: 330-972-6328
- University Counseling and Testing Center – uakron.edu/counseling 330-972-7082
- University Health Services – uakron.edu/healthservices 330-972-7808

Tentative Course Schedule

Business Analytics 6500:305-502 Fall 2018

(subject to update – updated 26 aug 2018)

Week	Topic	Assignments
Wk 1: 27-31 aug	WELCOME AND COURSE OVERVIEW 1.1 Introduction to Business Analytics and Big Data	<i>all asgmts. due by 11:59PM</i>
Sun, 02 sep 2018		Disc. 1 due
Wk 2: 03-07 sep <i>(no classes Mon 03 sep)</i>	2.1 Business Analytics Process BSTAT ASSESSMENT QUIZ	
Sun, 09 sep 2018		Quiz 1 due
Wk 3: 10-14 sep	2.2 Ethical and Privacy of Data Issues 3.1 Data: Concepts, Cleansing, Exploration & Visualization	
Sun, 16 sep 2018		Disc. 2 due
Wk 4: 17-21 sep	3.1 Data: Concepts, Cleansing, Exploration & Visualization <cont>	
Sun, 23 sep 2018		Quiz 2 due
Wk 5: 24-28 sep	3.1 Data: Concepts, Cleansing, Exploration & Visualization <cont> <i>lab time</i>	
Sun, 30 sep 2018		Lab 3.1 due
Wk 6: 01 – 05 oct	<i>project team time</i>	
Sun, 07 oct 2018		Proj. Pt. 1 due
Wk 7: 08-12 oct	3.2 Statistical Testing: T-test, ANOVA, and Chi-Square	
Sun, 14 oct 2018		Quiz 3 due
Wk 8: 15-19 oct	3.2 Statistical Testing: T-test, ANOVA, and Chi-Square <cont> 4.1 Correlation & Linear Regression Analysis	
Sun, 21 oct 2018		Lab 3.2 due
Wk 9: 22-26 oct	4.1 Correlation & Linear Regression Analysis <cont>	
Sun, 29 oct 2018		Lab 4.1 due
Wk 10: 29 oct – 02 nov	MIDTERM EXAM	
Sun, 04 nov 2018		
Wk 11: 05-09 nov	4.2 Logistic Regression	
Sun, 11 nov 2018		Lab 4.2 due
Wk 12: 12-16 nov	4.3 Model Comparison	
Sun, 18 nov 2018		Lab 4.3 due Disc. 3 due
Wk 13: 19-23 nov <i>(no classes after 5PM Wed)</i>	4.4 Decision Tree	
Sun, 25 nov 2018		Lab 4.4 due
Wk 14: 26-30 nov	4.5 Cluster Analysis	
Sun, 02 dec 2018		Lab 4.5 due Disc. 4 due
Wk 15: 03-07 dec	4.6 Neural Networks	
Tue, 04 dec 2018		Proj. Pt. 2 due

Note: The above schedule is intended to serve as a general outline and it is subject to change. Topics are tentative and may need to be modified during the semester.