The University of Akron
Department of Management

Business Analytics
6500:305:004 (3 credits)

Instructor Information	Class Information
Dr. Barbara A. Osyk	Class Location: CBA Lab 106
Email: bao@uakron.edu	
Office: CBA 368	
Phone: 330-972-5439	
Office Hours: T/TH (Eastern Time) 10:00 – 10:30 am, 3:00 – 4:30 pm, 5:30 – 6:30 pm Also 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

Course Overview

This hybrid course will utilize a "flipped" approach. You are expected to access the recorded lecture material before class. Class time will be utilized for various in class activities, with an emphasis on hands-on practice exercises and labs. You will be working independently on quizzes, labs, and exams. Optionally you may work with one or two team members on labs. You will be working with a team on cases. All assignments are to be submitted electronically via Springboard, The University of Akron's course management system.

It is very important for you to log into Springboard every week to find the latest updates for class. The Springboard website will be used to post class notes, PowerPoint slides, reading materials, class assignments, announcements, etc. If you are new to Springboard, you can get started by watching the tutorials here. Course communications will be through Springboard and the class roster. Make sure that you have your UA email forwarded to whichever email you check. Set up notifications through Springboard to be notified of updates in the course.

Materials and assignments for each module will be updated on a weekly basis. You will usually have at least one week to complete quizzes and labs, for each module, with more lead time for cases.

Overall goals for the course:

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

Specific objectives (course competencies) for this course:

Upon successful completion of this course, students should 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:

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

Required Materials

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)

Additional Resources

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 also be using selected materials from *Essentials of Business Statistics*, by Bowerman et al, 5th edition (the book from 6500:304) in addition to various articles, videos, and other materials with links posted on Springboard.

Instructor Contact and Reply Policy

General questions that would be of interest to the class should be posted on the "clarification please" discussion board on Springboard. Contact the instructor via email for individual questions. You should generally expect a response within 24 hours on weekdays and 48 hours over a weekend. Most assignments should be graded and returned within one week.

Note that in person tutoring help will also be available for this course in the Management Department. Details will be posted on Springboard.

Evaluation and Assessment

Grading

Final grades are based on total points earned.

Item	Points	Percent of total grade
Individual Quizzes (highest 8 @ 10 points each)	80	16%
JMP labs/homework assignments (highest 8 @ at 10 points each)	80	16%
Team Case One (visualization, statistics, simple and multiple regression)	70	14%
Team Case Two (visualization, statistics, logistic regression, decision trees)	100	20%
Midterm exam on modules 1- 6 (in class, closed book and closed notes)	70	14%
Comprehensive final exam on modules 1-10 (in class, closed book and closed notes)	100	20%
Total points	500	100%
BStat assessment quiz (up to 10 bonus points)	10	Up to 2% bonus
Contributions to Clarification Please/Tips and Tricks and other discussion board questions (up to 10 bonus points)	10	Up to 2% bonus

Letter grades are assigned as follows based on total points earned:

Grading scale: 465-500 A; 450-464 A-; 435-449 B+; 415-434 B; 400- 414B-; 385-399 C+;
365-384 C; 350-364 C-; 335-349 D+; 315-334 D; 300-314 D-; < 300 F

Grade component descriptions

Exams. The proctored midterm and final exams will be closed book and closed notes and will consist of multiple choice and true/false questions. The final exam is comprehensive. The dates are listed in the course schedule and specific Springboard folders. Exams will be administered online in CBA Lab 106.
Check the course calendar for exam dates and plan well in advance of the exams.

Discussion posts. Please complete an introductory discussion post before the end of the first week of class. (This might also be a good way to find team members!) In addition, "Clarification Please" and "Tips and

Tricks" discussion areas will be available throughout the semester, which provide places for you to post questions and answers about the course. Answers to questions posed in the "Clarification Please" discussion area will be eligible for **extra credit points** at the discretion of the instructor. If you find any "tips or tricks" (generally regarding the JMP software) you should also post them in the "Tips and Tricks" discussion forum for potential extra credit. Periodically throughout the semester, opportunities for other discussion topics may be available. In addition, several homework assignments will involve posting in a discussion forum.

Quizzes. Ten online quizzes will be assigned based on the assigned readings and course materials. You will have two attempts at each quiz, and the highest grade will count. The highest 8 of 10 grades will count towards your final grade. On each quiz the total score will be shown after the first attempt, and detailed answers will be provided after the second attempt. Quizzes are to be completed on an **individual** basis. **No late quizzes will be accepted.**

Labs/Homework. Seven labs and three homework assignments**,** with most utilizing the JMP software, will be assigned during the semester. Some class time will be allocated to working on the labs. Labs/homework may be completed with **one or two partners** or on an individual basis. If you complete the lab with a partner, be sure to include both names on your submission. Note that a maximum of three students may work together on any assignment. The highest 8 of 10 grades will count towards your final grade. **The first incident of copying/plagiarism on a lab assignment will result in a zero for that assignment for all students involved. The second incident will result in an F for the course.** Labs/homework may be submitted late for half credit (5 points maximum).

Team Cases. Comprehensive cases will be completed in teams of three to four students. **The first incident of copying/plagiarism on a case assignment will result in a zero for that assignment for all students involved. The second incident will result in an F for the course.** Cases will include an executive summary and supporting analysis. More details will be provided when the first case is assigned. Cases may be submitted late with a 10% per day penalty and will not be accepted after graded cases have been returned.

Course Policies and Expectations

Attendance

In order to succeed in this course, regular attendance is required. Examples of active participation might include participating in an in-class discussion, submitting an assignment, participating in an online discussion, and completing in class tutorials and labs.

Participation

Responsible attendance means that you will plan your schedule so that you can meet course requirements and manage your time so that you can complete your assignments on or before the date they are due. The *tentative course calendar* can be seen on the last two pages of this syllabus. If the calendar needs to be changed for any reason during the course, written notice will be provided.

You are expected to participate in this course as follows:

- You must review all course content posted to the Content tab in Springboard unless that content is clearly labeled as optional.
- You should login to this course at least once per week to check for new content and new discussion posts. Additional access may be required in order to meet course due dates and to complete all required learning activities.
- You must read all Announcements posted on the course home page.
- You must read all posts to the course discussion in Springboard. You are responsible for all information posted to the course discussions.
- You are responsible for completing and submitting all assignments to the course drop box before the due date. You are responsible for clearly labeling your papers so I can identify your submission. You are also responsible for submitting files in a format that I am able to open such as .doc, .docx, .pdf, .ppt, pptx, or .txt. 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 Assignment box submission has been received. You will receive an email confirmation when you submit assignments. You will be also able to track your submissions in Springboard.
- You are responsible for completing all labs, homework, quizzes, cases and exams 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, contact ZipSupport to ensure that the issue is tracked though the Footprints ticketing system. No adjustments to deadlines for technical reasons will be accepted without a Footprints ticket.

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.

Late Assignments & Make-up Policies

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

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

Withdrawal Policy

- A student may drop a course through the 14th calendar day of a semester (9/12/16) 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 (10/17/16) 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

My standard policy is assign a grade of "0" to the student for the assignment involved for the first offense and to fail from the course any student that engages in academic misconduct after the first offense. Egregious episodes may result in my forwarding the student to the University for More Severe Discipline. 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.

Classroom Behavior

Professional and considerate behavior 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.

Support

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/
- Springboard self-help can be found here: http://www.uakron.edu/it/instructional_services/dds/springboard/springboard-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/springboard/springboard-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
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

Dates	Module	Module Title/ TOPICS/READINGS *(Shmueli et al is required text; Klimberg & McCullough text available through University Library)*	Activity/Due dates (due at 11:59 pm unless stated otherwise)
T 8/30	0	Introduction & Course Overview *Readings: Syllabus and various course orientation materials*	Quiz 1 (Module 0 - syllabus and course orientation materials) due F 9/2 Introduction Discussion post due F 9/2
TH 9/1	1	Introduction to Business Analytics & Big Data *Readings: Chapter 1: Shmueli et al* *Other materials as posted*	BStat assessment quiz last 30 minutes of class (one attempt – 30 minutes - extra credit)
T 9/6 TH 9/8	2	Business Analytics Life Cycle & Ethical Decision Making *Readings: Chapter 2: Shmueli et al* *Article on CRISP-DM and other posted materials*	Quiz 2 on Modules 1 & 2 due Friday 9/9 Hwk 1 (CRISP-DM Discussion post) due Sunday 9/11
T 9/13 TH 9/15	3	**Deadline to drop course is Monday 9/12/16** Data and Basic Analytics (Review of Business Statistics - Selected topics in Descriptive and Inferential Statistics) *Readings: Chapter 2: Klimberg and McCullough* *BStat review materials as posted*	Quiz 3 on module 3 due Friday 9/16
T 9/20 TH 9/22	4	Intro to JMP & Visualization (Exploratory Data Analysis) Lab time on Thursday 9/22 *Readings: Chapter 3: Shmueli et al* *Chapter 3: Klimberg & McCullough* *Chapter 4: Klimberg & McCulough (pp 82-101)*	Quiz 4 on module 4 due Friday 9/23 Lab 1 (Using JMP- Visualization & Basic Stats) due Sunday 9/25
T 9/27 TH 10/3 T 10/4 TH 10/6	5	Correlation and Regression (Simple & Multiple) Methods Lab time on Thursday 10/6 *Readings: Chapter 6: Shmueli et al* *Readings: Chapter 13 and 14 from Bowerman (BStat) textbook*	Quiz 5 on module 5 due Friday 9/30 Lab 2 (Regression & Correlation) due Sunday 10/9
T 10/11 TH 10/13	6	Principal Components Analysis (PCA) Lab time on Thursday 10/13 *Readings: Chapter 4: Shmueli et al* *Chapter 6: Klimberg & McCullough*	Quiz 6 on module 6 due Friday 10/14 Lab 3 (PCA) due Sunday 10/16

T 10/18 TH 10/20		**Last Day to Withdraw from course is Monday 10/17/16** Midterm exam during class time 10/18 Team time for case one on TH 10/20	Midterm exam (Modules 1-6) Tuesday 10/18 Team case one due Saturday 10/22 at 11:59 pm
T 10/25 TH 10/27 T 11/1 TH 11/3	7	Logistic Regression (LR)/Evaluating Performance Lab time on Thursday 11/1 *Readings: Chapter 10: Shmueli et al* *Chapter 5: Klimberg & McCullough*	Quiz 7 on Module 7 due Friday 10/28 Lab 4 (LR/Evaluation) due Sunday 11/6
T 11/8 TH 11/10	8	Decision trees (DT)/Evaluating Performance Lab time on Thursday 11/10 *Readings: Chapter 9: Shmueli et al* *Chapter 8: Klimberg & McCullough*	Quiz 8 on Module 8 due Friday 11/11 Lab 5 (DT/Evaluation) due Sunday 11/13
T 11/14	9	Model Comparisons (LR and DT) *Readings: Chapter 5: Shmueli et al* *Chapter 10: Klimberg & McCullough*	Hwk 2 (Model comparison) due Friday 11/18
TH 11/16	10	Cluster Analysis (CA) *Readings : Chapter 14 : Shmueli et al* *Chapter 7: Klimberg & McCullough*	
T 11/22		Thanksgiving Week! Lab time on Tuesday 11/22	Quiz 9 on Module 10 due Friday 11/25 Lab 6 (CA) due Sunday 11/27
T 11/29 TH 12/1	11	Neural networks (NN) Lab time on TH 12/1 *Readings : Chapter 11 : Shmueli et al* *Chapter 9 : Klimberg & McCullough*	Quiz 10 on Module 11 due Friday 12/2 Lab 7 (NN) due Sunday 12/3
T 12/6 TH 12/8	12	Overview/Review for final exam Team time for case 2 *Readings as posted on Springboard*	Homework 3 (Example of BA) due Monday 12/5 Team Case two is due Friday 12/9 at 11:59 pm
T 12/12		Final Exam week	Final Exam T 12/13 12:15 pm

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. Additional reading materials, videos, etc. will be assigned on Springboard.