

CONTEMPORARY ANALYTICS [FALL 2022]

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COURSE WEBSITE

We will be using Blackboard® for the course homepage. Class notes, assignments, and announcements will be posted there (some announcements will also be sent to your WKU e- mail). Students should check for notes and assignments on this site each day.

COURSE CALENDAR

Week	What to Do?	Due Date
<p style="text-align: center;">Week 1</p> <p style="text-align: center;">August 22 - August 29</p> <p style="text-align: center;">(What is Modeling?)</p>	<ul style="list-style-type: none"> • Introduce Yourself & Post your opinion about Big Data TED Talk on Discussion Board (50 Points) • Install RapidMiner • Install & Activate Tableau Desktop • Watch Module 1 Videos 	August 29
<p style="text-align: center;">Week 2 & Week 3</p> <p style="text-align: center;">August 30 - September 12</p> <p style="text-align: center;">(Predictive Modeling)</p>	<ul style="list-style-type: none"> • Do Module 1 Quiz (20 Points) • Watch Module 2 & Module 3 Videos • Repeat Case Study #1: Predicting Prices for Ridesharing Services - How much are customers willing to pay for a ridesharing service? • Assignment #1: Predicting Prices for used Toyota Corolla Cars? (100 Points) 	September 12
<p style="text-align: center;">Week 4</p> <p style="text-align: center;">September 13 - September 19</p> <p style="text-align: center;">(Intro to Visual Analytics)</p>	<ul style="list-style-type: none"> • Training: Tableau Desktop Boot Camp! • Watch some practical hands-on Video Training on How to Use Tableau Desktop (make sure to repeat them) • Additional to Tableau Desktop, you need to install: Tableau Public • Do Vis Assignment 1: Basic Charts (100 Points) • Do Vis Assignment 2: Advanced Charts (100 Points) 	September 19
<p style="text-align: center;">Week 5</p> <p style="text-align: center;">September 20 - September 26</p> <p style="text-align: center;">(Visual Analytics in Practice)</p>	<ol style="list-style-type: none"> 1. Pick one case out of these two cases (160 Points) <ul style="list-style-type: none"> ○ Yelp Vegas Customers' Case Study ○ Music Store Sales' Case Study 2. Pick one case out of these two cases (170 Points) <ul style="list-style-type: none"> ○ Health Care's Case Study ○ University Fund Raising's Case Study 3. Bonus: Telecom Case Study - Element of Visualization (100 Points) 	September 26
<p style="text-align: center;">Week 6 & Week 7</p> <p style="text-align: center;">September 27 – October 10</p> <p style="text-align: center;">(Put-it-All Together!)</p>	<ul style="list-style-type: none"> • Final Project (300 Points) 	October 10

COURSE DESCRIPTION

This course provides a comprehensive introduction and hands-on experience in data analytics, visual analytics, and visual data storytelling. It introduces students to design principles for creating meaningful displays of quantitative and qualitative data to facilitate managerial decision-making in the field of business analytics. Many organizations are using analytics and visualization to make better decisions and improve customer and shareholder value. This is deemed a critical skill in business today.

In this course we will learn about how to leverage the power of data analytics & visualization to communicate business-relevant implications of analyses. Modules are organized around concepts, tools, and applications, and cover the data analytics process from beginning to end-
-from collecting, preparing, and analyzing data to creating analytical visualizations, dashboards, and stories that share critical business insights. We will leverage the analytical capabilities of analytical tools such as Tableau, the industry leading visualization tool, and prepare students to be competent users of this technology.

***NOTE:** This course is hands-on and requires use of appropriate software to practice and apply concepts learned. Students should be prepared to spend time utilizing provided resources and independent learning to complement software instruction provided in Blackboard content management system.

DISCLAIMER

This syllabus is subject to change at the discretion of the instructor. Any such changes will be clearly communicated by email and/or on Blackboard.

COURSE PREREQUISITE

Before attending this course, you should have a personal computer to install some software packages, in order to do your assignments, during the semester.

COURSE LEARNING GOALS

- Understand how to use data to summarize, visualize and develop insights.
- Effectively use optimization to support decision-making in the presence of number of alternatives and business constraints.
- Identify, evaluate, and capture business analytic opportunities that create value.
- Explain data visualization principles and guidelines for effective analysis and presentation.
- Develop and interpret a wide range of visualizations.
- Verbally communicate persuasive, data-driven business insights.

COURSE TEXTBOOK : No Textbook.

SUGGESTED READING (NOT REQUIRED)

- Business Intelligence, Analytics, and Data Science: A Managerial Perspective by Ramesh Sharda; Dursun Delen; Efraim Turban (2018)

- Visual Data Storytelling with Tableau by Lindy Ryan, Pearson (2020)
 - The Functional Art, Alberto Cairo, New Riders (2012)
 - Storytelling with Data, Cole Nussbaumer, Wiley (2015)
 - Visualize This: Nathan Yau, Wiley (2011)
 - The Visual Display of Quantitative Information, Edward Tufte, Graphics Press, 2nd Ed.
 - The Big Book Dashboards: Visualizing Your Data Using Real-World Business Scenarios, Steve Wexler, Jeffrey Shaffer, Andy Cotgreave, Wiley (2017)
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TECHNICAL REQUIREMENTS

- A significant amount of time that students spend completing their assignments will involve the use of software applications. Instruction will be provided in Blackboard.
 - Students will be able to learn the basic features of one or more of these software programs through training videos that are posted in Blackboard, self-directed studies or by using available resources online.
 - The instructor is also willing to help with specific questions or techniques as needed. Students may use any technology platform for their final project, as long as work is presentable and accessible for review by the course instructor. If there is any question about whether work can be accessed for review or presentation, you must check with the instructor prior to submitting your work.
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PROCEDURES, TECHNIQUES, AND METHODS

This course will employ a variety of techniques directed at different styles of learning. In addition to video lecture, we will use discussions, brainstorming, case studies, hands-on activities, and presentations. The class will rely heavily on computer use. In addition, you must use the course web site on Blackboard for lecture notes, handouts, assignments, and links to other learning resources. Most classes will focus on real-world situations and cases to explain, illustrate, and demonstrate the concepts and techniques of contemporary business.

STUDENT OUTCOMES

After taking this course, students should be able to collect and process data, create an interactive visualization, and use it to demonstrate or provide insight into a problem, situation, or phenomenon. Moreover, students should have the basic knowledge needed to critique various visualizations (good and bad), and to identify design principles that make good visualizations effective. Students should also have a basic understanding of some of the challenges present in making data understandable across a wide range of potential audiences. Finally, students will have the opportunity to demonstrate their own skills in identifying a visualization that can be improved, completing their own design and/or analysis on the underlying data, and working to publish or promote acceptance of their presentation.

METHODS OF EVALUATION AND GRADING

Students are expected to prepare and participate by:

- Reading course content and producing scheduled assignments each week
- Participating in discussions posted on Blackboard
- Completing the assigned homework projects by the due date
- Participation in Final Project

- Students are expected to complete each test, exam, homework, and all other assignments independently. The student's submissions must represent his or her individual work, and citations must be provided where content from other sources is referenced. Also, you may not re-use a data set from one project to another; you must start with a completely new data set each time.

ADJUSTMENTS TO ASSIGNMENTS, SCHEDULE, AND SYLLABUS

The scope, timing, and due date/time of any assignments, projects, homework, exams, or any other required work may be adjusted by the instructor as needed to maximize learning opportunities for students and/or better serve the goals of the course. The syllabus may likewise be modified at the discretion of the instructor. Any adjustments will be communicated to students in emails and on Blackboard.

GRADED WORK

Grades will be posted online. Consider the online gradebook as a courtesy to you, subject to errors given various upgrades and shifts in the software. I reserve the right to make gradebook corrections to keep it consistent with the syllabus so that your grade reflects true performance, not software or user error.

Course grades will be determined as follows:

Homework	70%
Final Project	30%
Total	100%

FINAL PROJECT

The final project will be a Business Case Study. More details are posted on Blackboard.

GRADING SCALE

[89.5%, 100%] A [79.5%, 89.5%) B [69.5%, 79.5%) C [59.5%, 69.5%) D [0%, 59.5%) F

Homework assignments will be given and are due by the date and time indicated by the instructor. Through a variety of homework assignments, we will analyze best practices and compare and contrast with not-so-best practices. Students will learn to critique good and bad data analysis & visualizations and will be required to create and recreate various data analysis & data visualizations using various sets of data.

IMPORTANT DATES

- Class Begins: 8/22/2022
- Class Ends: 10/10/2022

E-MAIL ETIQUETTE

- Each student must have a WKU email address and Blackboard account for participation. Email and Blackboard are considered official communication tools for this course. Thus, announcements and reminders are posted/sent frequently and will be sent only to official WKU email addresses. If you use a different email address, please ensure that your WKU email is forwarded correctly. It is your responsibility to check WKU email and Blackboard regularly and to be aware of all reminders and announcements.
- E-mail will generally be the best way to contact me. During normal business hours, I usually respond to e-mail fairly quickly.
- Please keep in mind that I am not as quick to respond to e-mail in the evenings or during the weekends, and holidays. Please consider e-mail as a method of professional correspondence. Thus, you should do your best to use correct grammar, punctuation, and capitalization.
- Also, when you contact me via e-mail, make sure that you include BA-513 as well as your last name in the subject line of the e-mail.

ASSIGNMENTS EVALUATION RUBRIC

Criteria	10 – Outstanding	9 – Proficient	8 – Basic	7 (or lower) - Below Expectations
OBJECTIVE				
Completed assignment per requirements	All portions of the assignment, including presentations, data preparation, and visualizations were attempted and submitted.	This is a pass / fail component. All or no points are awarded.		
The analysis is appropriate and sufficient	The data analysis used is appropriate, correct, and sufficient to support the findings.	The data analysis is appropriate but minor issues may be present or enhancements may be needed.	The data analysis is related but not sufficient to support the findings, or significant data analysis issues prevent a clear reading of the results.	The data analysis has little or no relation to the topic being explored, errors will lead to incorrect conclusions, and/or data issues make the findings unusable.
Headers, directions, citations, and visual cues are given as guides	A clear direction is provided. Visual cues, tooltips, and citations are consistently and correctly employed to inform and guide.	Headers, footers, and instructions are present, but visual cues may be missing or could be improved.	The user must self-discover functionality. Headers and footers may be missing. Difficult to know what to do.	The user has little or no indication of how to engage. Directions are missing or unclear. Missing headers and footers for context and meaning.
SUBJECTIVE				
Analysis & Viz are clean, clear, concise, captivating	The data analysis & data Viz used are well represented; the visualization is clear, clean, concise, and captivating.	Aspects of data analysis & data Viz are apparent; opportunity exists for further enhancement.	Multiple aspects of data analysis & data Viz are missing, or have not been well addressed in the visualization.	Significant or complete disregard for the guidance present in the lectures, resulting in poor data analysis & visualization.

Attractiveness and attention to design and details of craft	Fonts choices are conscious and consistent, proper grammar and spelling are used, and choice of position, size, and emphasis integrate elements into a visually appealing and engaging whole.	The visualization shows thought and planning, and most aspects work in harmony. May exhibit minor issues with spelling, alignment, or sizing mismatched with importance.	Visualization appears sloppy and may be difficult to understand as a coherent whole. Multiple issues with spelling, font consistency, positioning, or other distracting characteristics.	Little or no apparent thought or given and visualization comes across as disorganized. May be visible through numerous spelling or grammar issues, poor alignment, and positioning choices inappropriate font use, etc.
Criteria	10 – Outstanding	9 – Proficient	8 – Basic	7 (or lower) - Below Expectations
The visualization is usable and actionable	The visualization is targeted to the audience, the story is evident, and the conclusion or action required is clearly apparent. No additional interpretation is needed.	There is a clear message or story conveyed, but the action or conclusion that should be drawn is not definitive. May require interpretation.	The visualization suggests some possibilities but does not lead to clarity of understanding and therefore action is not possible.	No apparent message or relevancy to the user; no actions can nor should be taken based on the analysis.
Quality, integrity, and impact of the findings and analysis	The analysis shows a level of quality, integrity, and competency that makes the data analysis & data viz impactful, generating a high level of trust.	The overall conclusions of the analysis seem to be sound, with support by anecdotes or additional evidence.	The analysis shows a trend or suggests a result, but is not trustworthy because of errors in the process, omission, or scope.	The analysis appears to be poorly conducted, greatly compromising the integrity of some or all of the data analysis & visualization.
The overall effectiveness of communication and presentation	The presentation is delivered in a convincing way that demonstrates confidence, competency, and thoroughness.	Delivery provides a strong argument and is well supported; minor details should be vetted and affirmed.	The presentation and communication leave concerns or lingering lack of clarity. Work required to review and confirm.	The communication and presentation result in confusion and a low level of confidence in the analysis, requiring a significant or complete re-do.

STUDENT EXPECTATIONS

Students are expected to read the scheduled assignments. Also, to complete the assigned homework, and quizzes posted on Blackboard, by the due dates. Most importantly, they must complete homework all assignments independently.

ADDITIONAL POLICIES

- The professor reserves the right to make changes to the syllabus or schedule as necessary; it is the student responsibility to be aware of these changes by periodically checking the syllabus on Blackboard Course Site.
- Problems with Blackboard should immediately be reported to the Information Technology Services at (270) 745-7000.
- Don't email your assignment to me unless I instruct you to.
- Assignments are due and must be uploaded to the appropriate location by the announced due date. Your assignments must be uploaded to the correct place to receive a grade.
- A malfunction of your personal computer is not a reason for not completing a test or assignment on time.
- It is the student's responsibility to check the site to make sure the assignment upload was successful.
- Students experience personal illnesses, a family crisis, work schedule problems, automobile trouble, and similar "life" situations every semester. These are not typically unusual circumstances and do not warrant exceptions to course policies. Good planning and proactive efforts on the part of the

student can avoid many of the problems that arise from these situations.

ACADEMIC DISHONESTY

- Students who commit any act of academic dishonesty will receive from the instructor a failing grade F in this course. This rule applies to any act that involves cheating and plagiarism.
- Cheating will not be tolerated. Note that cheating might involve but not limited to the following actions: *“To represent written work taken from another source as one's own is plagiarism. Plagiarism is a serious offense. The academic work of a student must be his/her own. One must give any author credit for source material borrowed from him/her. To lift content directly from a source without giving credit is a flagrant act. To present a borrowed passage without reference to the source after having changed a few words is also plagiarism,”* for more details, refer to <https://www.wku.edu/undergraduatecatalog>.

University Policies

ADA ACCOMMODATIONS

In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, Room 1074. The SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via email at sarc.connect@wku.edu. Please do not request accommodations directly from the professor or instructor without a faculty notification letter (FNL) from The Student Accessibility Resource Center.

Title IX/ Discrimination & Harassment

Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's [Sex and Gender-Based Discrimination, Harassment, and Retaliation](#) (#0.070) and [Discrimination and Harassment Policy](#) (#0.2040). Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Executive Director, Office of Institutional Equity/Title IX Coordinator, Ena Demir, 270-745-6867 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121. Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are “Responsible Employees” of the University and MUST report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's [Counseling and Testing Center](#) at 270-745-3159.

COVID-19

All students are strongly encouraged to [get the COVID-19 vaccine](#). In accordance with WKU

policy, all students must call the WKU COVID-19 Assistance Line at 270-745-2019 within 4 hours of testing positive for COVID-19 or being identified as a close contact to someone who has tested positive. The COVID Assistance Line is available to answer questions regarding any COVID-19 related issue. This guidance is subject to change based on requirements set forth by federal, state, and local public health entities. Please refer to the Healthy on the Hill website for the most current information.

www.wku.edu/healthyonthehill

WKU Counseling and Testing Center

The university experience should be challenging, but not overwhelming. To this end, the WKU Counseling Center provides a variety of services to help strengthen students' capacity to tolerate distress, form healthy relationships, and seek healthy expressions of their ideals and values. If you would like to speak with someone, you may contact WKU's [Counseling and Testing Center](#) at 270-745-3159 or use their Here To Help service at <https://www.wku.edu/heretohelp/heretohelpemail.php>. If you need immediate help, please visit the Counseling Center in 409 Potter Hall or call the 24-hour emergency help line at 270-745-2548.

Big Red Backpack

The Big Red Backpack program is the title of WKU's partnership with Barnes & Noble College for their First Day Complete initiative. Big Red Backpack is a course materials delivery program that ensures students have their required course materials on the first day of class and may reduce the costs of materials for many of their courses. Enrollment in the program occurs automatically when students register for classes. Students may opt out of the program each semester, as long as they choose to opt out for all of their classes.

Students MUST carefully and completely follow all instructions regarding the Big Red Backpack Program. Those instructions will be provided by:

1. An email to all Topper email addresses from the Big Red Backpack Program one month prior to the start of classes.
2. The Big Red Backpack Program site: <https://www.wku.edu/bigredbackpack/>.

Students should refer to the Big Red Backpack Program site referenced above for opt-out deadlines and any additional details.