BDAN 513/BA 513: CONTEMPORARY ANALYTICS

WKU - Department Analytics and Information Systems

Course Syllabus

January 21, 2025 - March 7, 2025 [Spring Term]

Professor:	Dr. Lily Popova Zhuhadar
Email:	Lily.popova.zhuhadar@wku.edu
Office Location:	Center for Applied Data Analytics, Grise Hall 128.
Office Hours:	By Appointment—please, email me to schedule a meeting.
Course Website:	**E-learning Website:** https://wku.blackboard.com/ Please log in to the system to stay updated on class communications, the schedule, grades, and any updates to this document. Regularly checking the platform will ensure you don't miss important information.
Required Text:	There is no required textbook for this course; All readings will be provided through Blackboard.
Software Requirements:	**AI Studio** (also known as RapidMiner Studio). Installation instructions are available on Blackboard.

COURSE DESCRIPTION

This course offers a comprehensive introduction and practical experience in data analytics, visual analytics, and visual data storytelling. It presents learners with design principles for creating meaningful displays of both quantitative and qualitative data to facilitate managerial decision-making in the field of business analytics. With many organizations leveraging analytics and visualization to enhance decision-making and improve customer and shareholder value, these skills are considered critical in today's business environment.

Within this course, learners explore how to use data analytics and visualization to communicate the business-relevant implications of analyses. Modules are organized around concepts, tools, and applications, covering the data analytics process from start to finish—from collecting, preparing, and analyzing data to creating analytical visualizations, dashboards, and stories that share critical business insights. The course leverages the analytical capabilities of tools such as AI Studio, the industry-leading predictive modeling tool, aiming to equip students to be competent users of this technology.

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

COURSE LEARNING GOALS

- Students will learn how to use data to summarize, visualize, and develop insights.
- They will be able to effectively use machine learning algorithms to support decision-making in the presence of numerous alternatives and business constraints.
- Students will acquire skills to identify, evaluate, and capture business analytic opportunities that create value.
- They will comprehend and explain data visualization principles and guidelines for effective analysis and presentation.
- Students will develop and interpret a wide range of visualizations and predictive models.
- Finally, homework assignments will be assigned and are due by the date and time specified by the instructor.

These assignments are designed to be an integral part of the course, aiming to provide a comprehensive understanding of data analysis and visualization.

- Through a wide range of homework assignments, students will gain the opportunity to deeply analyze effective techniques and juxtapose them with less efficient methods. This comparative exercise is expected to cultivate an analytical mindset, enabling students to differentiate between high-quality and mediocre approaches within the field of data analysis.
- Beyond critiquing, the assignments will also push the students to learn how to develop and improve upon existing data visualizations. They will be exposed to good and bad examples of data analysis and visualizations, and this critical comparison will assist them in honing their skills. It will equip them with a nuanced understanding of what makes a visualization compelling and effective, as well as the common pitfalls to avoid in data representation.
- Further, they will be challenged to create and recreate various data analysis and visualizations using multiple sets of data. This hands-on approach will not only allow students to apply their theoretical knowledge but also foster creativity and problem-solving skills in working with data.
- The goal of these assignments is not only to enhance students' technical skills but also to develop their critical thinking capabilities in the realm of data analysis and visualization.

TECHNICAL REQUIREMENTS

- A significant portion of the time that students dedicate to completing their assignments will involve the use of software applications, with instruction provided through Blackboard.
- Students will have the opportunity to learn the basic features of one or more of these software programs through training videos posted on Blackboard, self-directed studies, or by utilizing available online resources.

PROCEDURES, TECHNIQUES, AND METHODS

This course will employ a variety of techniques to cater to different learning styles. Besides video lectures, the course will utilize discussions, brainstorming sessions, case studies, hands-on activities, and presentations. The course will rely heavily on computer use. Students are required to use the course website on Blackboard for lecture notes, handouts, assignments, and links to other learning resources. The majority of the classes will focus on real-world situations and cases to explain, illustrate, and demonstrate the concepts and techniques of contemporary business.

Student Outcomes

Upon completion of this course, students should possess the skills to collect and process data, create interactive visualizations, and use these visualizations to illuminate problems, situations, or phenomena. They should also have foundational knowledge that enables them to critique various visualizations, both effective and ineffective, and to identify design principles that contribute to successful visualizations.

Students are expected to gain a basic understanding of the challenges involved in making data comprehensible to a diverse array of audiences. Lastly, they will have the opportunity to demonstrate their skills by identifying a visualization that can be improved, undertaking their own design and/or analysis of the underlying data, and striving to publish or encourage acceptance of their presentation.

Graded Work

- Grades will be posted online. The online gradebook should be considered as a courtesy to the students, subject to errors due to various upgrades and shifts in the software. The instructor reserves the right to make corrections to the gradebook to keep it consistent with the syllabus, ensuring that students' grades reflect their true performance and not any software or user errors.
- Please note that this course does **not have a proctored final exam**. Instead, you will be completing a **final project**, which accounts for **30% of your total grade**.
- The final project is divided into two parts: a **written comprehensive report (15%)** and a **video pitch (15%)**. You will need to record the video pitch with both a screen capture of your computer and yourself explaining your final project. Ensure you have a camera for the recording. More details will be provided on Blackboard.

Your grade for the course will be determined according to the following scheme:

Assignment	Points
Homework Assignments	700
Final Project	300
TOTAL	**1000**

The grading scale will be as follows:

Letter Grade	Required Points
A	900 – 1000
B	800 – 899
C	700 – 799
D	600 – 699
F	599 and below

ASSIGNMENT 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 on clear. 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.
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

- It is expected that students will read the scheduled assignments by the specified due dates.
- Cheating will not be tolerated. It's important to note that cheating can involve, but is not limited to, actions such as plagiarism. Any source material must be properly credited.
- Any issues with Blackboard should be reported immediately to IT at (270) 745-7000.
- Students should not email their assignments unless specifically instructed to do so.
- Assignments are due and must be uploaded to the appropriate location by the announced due date. To receive a grade, assignments must be uploaded correctly.
- A malfunctioning computer is not a valid excuse for failing to complete an assignment on time.
- Checking the site to confirm the upload of an assignment is a responsibility of the student.
- Each semester, students might experience personal illnesses, family crises, work schedule issues, automobile troubles, and other "life" situations. These are not typically considered unusual circumstances and thus do not warrant exceptions to course policies. Students are advised to plan well and take proactive steps to avoid many of the problems that can arise from these situations.

Attendance

Online recordings will provide essential information for both mastering the course topics and working on the final project. Merely relying on the assigned reading materials will not suffice for success in this course. You are responsible for all materials, including class readings, presented content, activities, assignments, and quizzes. Please note that there will be no make-up activities due to a lack of participation.

Communication

Communication with students will be conducted through email, the class website, and virtual office hours.

- **Class Website**: Blackboard (https://wku.blackboard.com/) will be used extensively for this class. Please log in following the "Login" instructions. Once logged in, find this class in your list of courses. Check Blackboard daily for announcements, reading materials, assignments, and other important information.
- **Email**: As a WKU student, you are assigned a university email account. Check your WKU student email daily for course updates. All email communication with me must be through your WKU email account to ensure you receive messages and respond accordingly.

Additional Course Policies

1. The professor reserves the right to make changes to the syllabus or schedule as needed. It is your responsibility to stay informed about these changes.
2. Familiarize yourself with the academic calendar posted on the WKU website (https://www.wku.edu/registrar/academic_calendars/).
3. Report any issues with Blackboard to Information Technology Services at (270) 745-7000 immediately.

Regular and Substantive Interaction

In compliance with the U.S. Department of Education's requirements for distance education, this course will include regular and substantive interaction between students and faculty. Interaction will occur through:

- Weekly announcements
- Detailed feedback on assignments provided within one week of submission
- Instructional videos

Academic Integrity

Maintaining academic integrity and honesty is essential in this course. Students must adhere to WKU's Code of Student Conduct, with a special emphasis on academic integrity and honesty. Plagiarism, cheating, or any form of academic dishonesty will result in a "0" for the assignment and potentially a failing grade in the course. Serious violations may be referred to the WKU Office of Student Conduct.

Specific Use of AI Permitted

While I expect your submitted work to be your own, there may be specific assignments where AI tools (such as ChatGPT) can be used to enhance your learning experience. In such instances, instructions will be provided on how to appropriately utilize and cite AI tools. For general assignments, unauthorized use of AI tools is prohibited unless permission is granted. If you are unsure about AI usage, please reach out to me. Guidance on citing AI tools can be found here: AI Citation Guide.

ADA Accommodation

In compliance with university policy, students with disabilities requiring accommodations must contact the Student Accessibility Resource Center (SARC). Reach out via email (sarc.connect@wku.edu) or phone (270-745-5004). Please do not request accommodations directly from the professor without obtaining a Faculty Notification Letter from SARC.

Pregnant and Parenting Students

WKU ensures non-discrimination for students experiencing pregnancy-related conditions. For accommodations, contact the Title IX Coordinator, Ena Demir, at ena.demir@wku.edu or by phone at (270) 745-6867. Visit WKU's Title IX website for more information: WKU Title IX.

Title IX / Discrimination & Harassment

WKU is committed to a safe and inclusive environment. If you experience or witness any form of discrimination or harassment, you are encouraged to report it to the Title IX Coordinator or Investigator. For confidential support, reach out to WKU's Counseling and Testing Center (270-745-3159).

Inclusion Statement

WKU strives to ensure equitable and inclusive learning for all. Our classroom is a respectful space, welcoming individuals of all identities and backgrounds. If at any point you feel excluded, please contact me privately without fear of reprisal.

WKU Counseling and Testing Center

The Counseling Center offers a range of services to help students manage stress and maintain healthy relationships. For immediate assistance, contact the 24-hour emergency helpline at (270) 843-4357, or visit the Counseling Center in 409 Potter Hall.

WKU Talley Family Counseling Center

The Talley Family Counseling Center provides free mental health services to the WKU community. For more information, call (270) 745-4204 or visit: Talley Family Counseling.

WKU Intercultural Student Engagement Center (I.S.E.C.)

I.S.E.C. promotes a culturally inclusive environment at WKU. They offer support services and events to foster academic success. Contact I.S.E.C. at isec@wku.edu or visit I.S.E.C..

WKU Military Student Services

WKU Military Student Services provides personalized support for military students and their families. Contact them at (270) 745-2180 or visit Military Student Services.