

# **ECO 230 : Data Analysis for Business Applications**

## **Spring 2026**

### **Instructor Information**

*Name:* Saharnaz Babaei-Balderlou, Ph.D.

*Email:* sbabaeibalderlou@uwlax.edu

*Course AI Tutor:* [Click to open Quokka Query \(QQ\)](#)

*Office Hours:* Make appointment using [https://calendly.com/s\\_bb/office-hours](https://calendly.com/s_bb/office-hours)

*In-person Meetings:* 2134 Wittich Hall

*Online Meetings:* [Click to open Zoom room](#)

### **Class Information**

*Dates:* 1/26/2026 – 5/8/2026

*Time (Section 1 ):* MWF 12:05 - 1:00 PM

*Time (Section 2 ):* MWF 1:10 - 2:05 PM

*Time (Section 3 ):* MWF 9:55 - 10:50 AM

*Time (Section 4 ):* MWF 11:00 - 11:55 AM

*Classroom:* Wing 17

*Note:* See the weekly agenda in Canvas for more details and due dates.

### **Course Description**

Building on the foundation in Statistics acquired in STAT 145, students will continue to develop and will apply skills in data analysis to aid in business decision making. These skills include data collection, data summarization, data visualization, statistical inference, and communication of data in business contexts. Students will learn and apply the best practices for research design and analysis to address authentic business cases. Students will build these skills in collaboration with each other and through engagement with business and community leaders. The course also discusses effective survey design and current privacy and ethical issues in collecting and using data.

**Prerequisites:** *ENG 110 or ENG 112; STAT 145; CBA Major; CASSH economics major; or healthcare analytics management minor.*

### **Course Objectives**

The goal of this course is to help students develop and apply data analysis skills for solving real-world business problems. By the end of this course, students will be able to:

- Articulate business problems using qualitative and quantitative evidence and propose analysis plans to identify solutions.
- Collect, describe, summarize, and interpret data using descriptive and inferential statistics.

- Develop foundational skills with spreadsheets, interactive data visualization tools (e.g., Tableau), and scripting languages (e.g., R).
- Communicate the purpose, methodology, and results of data analysis to authentic business audiences in written and oral formats.
- Apply best practices in research design, survey construction, and statistical analysis to business case projects.
- Describe current ethical and privacy considerations in business data collection and analysis.

This course supports the College of Business learning goals, including:

- **Communication:** Effectively conveying ideas in business reports and presentations.
- **Decision Making and Critical Thinking:** Evaluating alternatives within business contexts using data analysis.
- **Social Responsibility:** Understanding the ethical and social implications of business data use.

## Course Structure

### Course Format

This course is delivered **face-to-face** – see the first page of syllabus for the class dates and time. Class meetings are hands-on: we will clean data, build graphs, run statistical tests, and practice explaining results in business language. Because each week builds on the last, attendance and active participation strongly affect your success even if attendance is not directly graded.

This is a skills-based course. In class, we will often work step-by-step through examples in Excel/Tableau/R to learn workflows. Your responsibility is to take notes, re-run the steps on your own, and review feedback on labs/homework so you can apply the same skills independently on projects. If you only follow along during class and do not practice outside of class, the projects will feel much harder later.

### Course Website

Canvas (<https://www.uwlax.edu/> > Canvas) is the home base. Announcements, the course syllabus, lecture slides, recordings, and notes, assignments and their solutions, exams, grades and any additional documents will be available on Canvas. Every week you will have the agenda with a checklist that tells you exactly what to do in order:

1. Overview + checklist
2. Slides / notes / short videos (when assigned)
3. Practice tasks (Excel / Tableau / R)
4. Graded work (labs, homework, quizzes, project milestones)
5. Submission links + rubrics

## 6. Common troubleshooting tips

This course is **not self-paced**. Deadlines matter because assignments build on each other and feed into the projects.

### Textbook and Readings

There is **no required textbook**. All readings, tutorials, datasets, and case materials will be posted on Canvas or linked from free sources. You are responsible for checking Canvas announcements and completing the weekly module tasks on time. If you are interested in exploring concepts or seeing additional examples, you may find the following book helpful. **This book is optional**. We may use selected sections aligned with course objectives. *Békés, G., & Kézdi, G. Data analysis for business, economics, and policy. Cambridge University Press.*

### Slides, Recordings and Notes

Each module includes recorded mini-lectures, slides, and activity guides. Please note that in-class discussions, demonstrations, and examples may not be fully reflected in the slides, so taking notes is highly recommended.

### Assignments and Projects

Your grade comes from repeated practice plus a few larger deliverables. Most weekly work is designed to build your skills toward the projects. Plan ahead; projects and most assignments are multi-stage!

- **Quizzes (concept checks):** Short quizzes on key ideas (data structure, visualization design, inference, ethics). Many quizzes have practice versions available.
- **Labs + Homework (skill building):** Applied tasks in Excel, Tableau, and R/RStudio. These are graded mainly on completion, effort, and following instructions.
- **Individual project:** A guided analysis that demonstrates you can clean data, visualize, and explain results independently.
- **Group project (multi-stage):** Teams analyze a business question using real data and submit staged deliverables (clean data, analysis outputs, and a communication deliverable). The final deliverable is a professional presentation.
- **Peer evaluation:** Used to adjust individual credit on group work based on contribution and professionalism.
- **Optional activities (extra credit):** Short in-class tasks that reinforce confusing topics. These cannot be made up later.

**Important:** Project instructions, rubrics, and deadlines live on Canvas. Most weekly labs/homework are practice grades (completion/effort + following instructions) so you can build skills safely and get feedback. Projects and the final deliverables are performance grades and are evaluated more strictly using a rubric (clarity, correctness, interpretation, and communication).

### Course AI Tutor — Quokka Query (QQ)

Quokka Query (QQ) is a course-specific tutor bot that helps you troubleshoot workflows (Excel/Tableau/R), interpret results, and improve your explanations. It can make mistakes, so you

must verify anything it suggests. QQ will be updated with materials from our weekly lectures and activities.

Access AI-tutor: <https://chatgpt.com/g/g-68a7e1536ae48191ad3b70b45168e1b9-quokka-query>

Use AI only when an assignment explicitly allows it. When AI is permitted, cite it briefly (example: “I consulted QQ for troubleshooting; I verified and revised the output.”). Using AI to generate restricted graded answers is academic misconduct. If an assignment asks for proof, export/download your QQ transcript and upload the .txt file to Canvas. You can create the log of your chats by asking the QQ itself.

## Software and Tools

You will be using the following tools throughout the course. All are free to UWL students:

- **Excel:** Used for data cleaning, summarization, and basic visualization.
- **Tableau:** A business intelligence platform for building interactive dashboards.
- **R and RStudio Cloud:** Web-based programming environment for statistical analysis and scripting.
- **DataCamp:** Online tutorials for learning and practicing R and Tableau. You will receive a free invitation to join the class workspace.
- **Qualtrics:** Survey design and distribution tool used for primary data collection.
- **Canvas and Office 365:** Used for all communication, collaboration, submissions, and documentation.
- **Generative AI tools:** We will explore how generative AI tools can assist with data-related tasks such as writing and interpreting R code, explaining concepts, drafting summaries or business recommendations. We will discuss ethical and responsible use of AI in academic and business contexts. All UWL students, staff, and instructors have access to Microsoft Copilot (basic). For data protection, sign in with your UWL account (look for the green shield). No paid AI tools are required for this course.

## Communication Expectations

Email is the best way to reach me. For meetings, use my Calendly link. I typically respond within 24–48 hours on weekdays.

To get help quickly, include:

- course + section number in the subject line,
- what you expected to happen,
- what happened instead,
- the exact error message (or a screenshot),
- and the relevant code chunk if it is an R/Tableau issue.

I post important announcements on Canvas (and they also go to your UWL email). Turn on notifications and check your email regularly.

## **Weekly Expectations**

Students who do well in this course usually follow the same routine each week:

- Check the weekly Canvas module early (not the night it is due).
- Attempt the practice task before starting the graded version.
- Save files with clear names and keep them organized.
- If you get stuck, ask for help early and include screenshots/error messages.

## **Technology Requirements**

You are not required to bring a personal computer to class. UWL provides access to computer labs with all necessary software installed. However, if you prefer a personal computer, you need reliable access to a **laptop or desktop** (a phone/tablet is not sufficient for most of the assignments). On your personal device, you should also have/install:

- Microsoft Office (via UWL's free student license)
- Tableau Desktop (student license provided in class)
- a modern browser (Chrome recommended) + reliable internet connection
- Access to RStudio Cloud (web-based, no installation needed)
- ability to upload/download files (CSV, XLSX, PDF)
- headphones/speakers for video tutorials when needed
- a PDF reader and basic file storage/management

## **Technical Support**

If you encounter technology-related issues (Canvas, login, software), contact the UWL Eagle Help Desk: [Submit a Helpdesk Ticket](#) or call (608) 785-8774 or visit: [uwlax.edu/its](http://uwlax.edu/its)

## **Minimum Technical Skills**

You should be comfortable with:

- Navigating Canvas and UWL email
- Uploading assignments and downloading resources
- Participating in group work (online and in-person)
- Following step-by-step instructions for online platforms like RStudio Cloud or DataCamp

## Grading

You can earn a total of 100 points. Grades are based on the following components:

Assessment	Percentage of Final Grade
Homework and Labs	20%
Quizzes	16%
Individual Project	10%
Group Project (multi-stage deliverables and peer-evaluations)	32%
Final Wrap-up Project	20%
QQ chat logs	2%
Optional Activities	Extra credit (Added to total grade)

### Anticipated Grading Scale

The final score from the above elements will determine the letter grades based on the following scale:

A	95-100%
AB	88-94.9%
B	80-87.9%
BC	75-79.9%
C	70-74.9%
D	60-69.9%
F	below 60

If there are changes to the grading scale, they will be announced in class. However, there will be no changes that raise the grade cutoff for any letter grade above the scale provided here. There will NOT be any CURVING in this class.

## Course and University Policies

### 1. Attendance

Regular attendance is important for your success in this course. If you miss a session, you are responsible for reviewing posted materials and checking Canvas. Please reach out to your group members or classmates for any context beyond the lecture slides. I do not re-teach the entire session during office hours, but I'm happy to help you understand specific concepts or answer questions. Meetings during office hours are typically 20–25 minutes. While absences are not penalized directly, in-class activities contribute to your learning and participation points. See the current University Attendance Policy on the UWL Syllabus Policy Information & Statements page for campus-wide standards at <https://www.uwlax.edu/info/syllabus/>.

### 2. Deadlines and Late Work

Assignments have deadlines listed on Canvas. Because this course is cumulative, late work creates a domino effect.

- On time: full credit
- Late within 48 hours: partial credit (unless otherwise stated)
- After 48 hours: not accepted

If you have a documented emergency, email me as soon as possible. Starting an assignment the night it is due is not an emergency.

### **3. Classroom Discipline**

Punctuality: Please arrive on time. If you need to leave early, inform me before class and do so quietly.

Etiquette: Keep side conversations to a minimum. If you're confused, please ask - that's what I'm here for. If you need to eat during class, please do so quietly and choose odor-neutral food. I may also bring a snack between back-to-back classes, and I will do so with the same consideration.

### **4. Class Schedule During Inclement Weather**

This in-person class will shift online if possible, rather than being canceled. You'll be notified at least two hours before the start of affected classes regarding any delays, online transitions, or cancellations.

### **5. Academic Integrity**

**Plagiarism and Cheating:** UWL and the College of Business Administration operate under an academic integrity system whereby it is assumed that students understand the rules and agree to abide by them. There are penalties for academic dishonesty. Cheating on assignments and plagiarism are the most obvious forms of academic dishonesty. Cheating includes giving or receiving unauthorized assistance in an academic exercise or receiving credit for work that is not your own. Using the words or ideas of another as if they were one's own is a serious form of academic dishonesty. If another person's complete sentence, syntax, key words, or the specific or unique ideas and information are used, one must give that person credit through proper citation.

**Artificial Intelligence (AI):** AI tools may be used in specific circumstances as outlined in each assignment. Any unauthorized use of AI tools is a violation of course expectations and will be subject to UW-La Crosse's [academic misconduct policy](#). Students are responsible for verifying the accuracy and appropriateness of content composed by AI. If you are in doubt as to whether you are using a tool inappropriately in this course, you are encouraged to discuss your situation with your instructor. When AI is permitted, cite it briefly (example: "I consulted QQ for troubleshooting; I verified and revised the output."). Using AI to generate restricted graded answers is academic misconduct. If an assignment asks for proof, export/download your QQ transcript and upload the .txt file to Canvas. You can create the log of your chats by asking the QQ itself.

All incidents of academic dishonesty will be reported and acted upon. The consequences for academic dishonesty can include a failing grade on a paper or a quiz, receiving zero for the assignment subjected to academic dishonesty, a failing grade in the course, or even a possible suspension from the institution. Refer to the [Student Handbook](#) for a detailed definition of academic misconduct. For helpful information on how to avoid plagiarism, go to "[Avoiding Plagiarism](#)" on the [Murphy Library website](#). You may also visit the [Office of Student Life](#) if you have questions about plagiarism or cheating incidents. Failure to understand what constitutes plagiarism or cheating is not a valid excuse for engaging in academic misconduct.

## **6. Copyright and the use of course materials**

All materials (including, lecture slide, notes, recordings of any presentation, discussions, homework questions and solutions, exams and solutions, quizzes, surveys, outlines and any other shared material through Canvas) are protected by copyright. It is recommended to take notes and use the course materials for your own educational purposes. However, you are not allowed to reproduce or distribute the course content (as mentioned) without the expressed written permission of the instructor. This includes sharing course material to any online social study sites or posting recordings and course content to **any** external website or service. Students who publicly reproduce, distribute, copy, or modify course content maybe in violation of the university Honor Code's Complicity policy, which prohibits sharing academic work with another student (either in person or electronically) without the permission of the instructor. Information regarding student conduct disciplinary procedures is available in the student [handbook](#) and in the catalog which also articulates the UWL Student Honor Code.

## **7. Use of Electronic Devices**

Electronic devices are permitted for note-taking and participation in class activities. However, using devices for non-academic purposes (e.g., texting, web browsing) is discouraged. If you use your phone inappropriately, I may ask you to put it away for the remainder of class.

## **8. Diversity, Equity and Inclusion (DEI)**

This class environment will be inclusive, safe, and respectful for all persons regardless of your background, sex, gender, race, ethnicity, class, political affiliation, physical or mental ability or any identity category. To that end, all course activities will be conducted in an atmosphere of friendly participation and interaction among everyone, recognizing and appreciating the unique experiences, background, and point of view each student brings. Please participate in the discussions and express yourself. You are expected at all times to apply the highest academic standards to this course and to treat others with dignity and respect. If you feel disrespected at any time, please talk to me—I promise to listen and address your concerns sincerely.

## **9. Accessibility, Disability, and Triggers [credit to Dr. David Moscovitz]**

I am committed to ensuring course accessibility for all students. Any student with a documented disability (e.g. ADHD, Autism Spectrum Disorder, Acquired Brain Injury, PTSD, Physical, Sensory, Psychological, or Learning Disability) who needs to arrange academic accommodations must contact the Disability Resource Center (DRC)

(124 Wimberly Hall, 608-785-6900, [drc@uwlax.edu](mailto:drc@uwlax.edu))

and meet with an advisor to register and develop an accommodation plan. In addition to registering with Disability Resource Center, it is the student's responsibility to discuss their academic needs with their instructors. If you have a documented disability and expect reasonable accommodation to complete course requirements, please notify me at least one week before accommodation is needed.

You can find out more about services available to students with disabilities at [The Disability Resource Center \(DRC\) website](#). Likewise, if you are aware of cognitive or emotional triggers that could disrupt your intellectual or mental health, please let me know so that I can be aware in terms of course content.

## **10. Sexual Misconduct**

This course works to foster a climate free of harassment and discrimination, and it values the contributions of all forms of diversity. The decision to enter university and pursue advanced study is a choice that entails commitment to personal ethics.

This course affirms equality and respect for all gendered identities and expressions. Please don't hesitate to correct me regarding your preferred gender pronoun and/or name if different from what is indicated on the official class roster. Likewise, I am committed to nurturing an environment free from discrimination and harassment. As an employee of the University of Wisconsin-La Crosse, I am a mandated reporter of sexual harassment and sexual violence that takes place on campus or otherwise affects the campus community. This means that if I receive detailed or specific information about an incident such as the date, time, location, or identity of the people involved, I am obligated to share this with a member of UWL's team in order to enable the university to take appropriate action to ensure the safety and rights of all involved. For students not wishing to make an official report, there are confidential resources available to provide support and discuss the available options. Please see [Title IX](#) for more resources or to file a report.

## **11. Religious Accommodations**

Per the UWL Undergraduate and Graduate Catalogs, "any student with a conflict between an academic requirement and any religious observance must be given an alternative means of meeting the academic requirement. The student must notify the instructor within the first three weeks of class (within the first week of summer session and short courses) of specific days/dates for which the student will request an accommodation. Instructors may schedule a make-up examination or other academic requirement before or after the regularly scheduled examination or other academic requirement."

## **12. Values**

Two core values, **inquiry** and **civility**, govern our class. Inquiry demands that we all cultivate an open forum for exchange and substantiation of ideas. Strive to be creative, to take risks, and to challenge our conventional wisdom when you see the opportunity. Civility supports our inquiry by demanding ultimate respect for the voice, rights, and safety of others. Threatening or disruptive conduct may result in course and/or university dismissal. Civility also presumes basic courtesy: please be well rested, on time, and prepared for class, which includes time for a restroom stop before (not during) class and silencing all personal devices. My perspective is that we never cease being students of this world, so I believe that attentive, reflective people always have something to learn from others. Good discussions can be energetic and passionate but are neither abusive nor offensive. Vibrant, vigorous inquiry derives from discussions that:

- challenge, defend, and apply different ideas, theories, perspectives, and skills,
- extend a body of knowledge into different arenas and applications, and
- result in a synergy that compels us to seek resolution to these discussions.

Every student in this class comes from a different academic and social background. My biggest goal in this class is to provide an atmosphere of learning that respects a variety of perspectives. Since we will analyze real-world data involving people, systems, and policies, please share your observations and interpretations — the discipline of Economics and field of data

analytics thrives on diverse insights. Questioning is a big part of learning. If you have a question, chances are others are wondering the same. Ask it — you'll be helping your classmates too.

### 13. Informal Complaints

If a student has a concern or a complaint about a faculty member or course, the general process for making informal complaints is outlined in the following steps:

- Speak directly to the instructor.
- If the student is uncomfortable speaking with the instructor, or they are unsatisfied with the solution, they should go to the chair of the faculty member's home department.
- If still unresolved or uncomfortable, the student should speak with their college dean.
- Additional resources: The Student Life Office, Center for Transformative Justice, and the Office of Title IX may be contacted depending on the nature of the complaint.

### 14. Student survey on instruction or learning environment survey ([LENS](#))

UWL collects student feedback electronically via the Learning Environment Survey (LENS). Prior to the conclusion of a course, you will receive an electronic notification directing you to complete the LENS for each of your courses. This survey is one of the extra credit activities in this class. If 80% of the class submits the survey, all students will receive bonus points added to their total grade. The survey includes multiple choice questions about your experiences in the class and provides options for comments. Both the university and I take your feedback very seriously, as it helps me improve course design, materials, and the class environment for future years.

### 15. Veterans, active military, and military-connected

Veterans, active military personnel, and immediate family members of a current service member with special circumstances (e.g., required military obligations, upcoming deployments, drill requirements, disabilities) are welcome and encouraged to communicate these, in advance if possible, to me. For additional information and assistance, contact the [Office of Veteran & Military Connection](#). Students who need to withdraw from class or from the university due to military orders should be aware of the [military duty withdrawal policy](#). For additional information and assistance, contact the [Office of Veteran & Military Connection](#).

To see the most up to date university policies, please refer to [UWL Syllabus Policy Information & Statements](#)

## Academic Success

I care about your success in this course and beyond. If you ever feel stuck, overwhelmed, or unsure how to move forward, please don't hesitate to reach out. I'm here to help — and UWL offers many resources to support your academic journey. Student success at UWL reflects a commitment to preparing students for success in their professional and personal lives. [UWL's mission](#) states that the university provides "a challenging, dynamic, and diverse learning environment in which the entire university community is fully engaged in supporting student success." To see the resources offered to all students at UWL that promote student success, explore support services here: [UWL Campus Life and Student Support Resources](#)