University of Wisconsin-La Crosse

ECO 230: Data Analysis for Business Applications

Fall 2025 | Section 04 | Credits: 3 | Wing 6 | MoWe 2:15PM - 3:40PM

Instructor Information

Instructor:	Ahmed El Fatmaoui
Office Location:	2110 Wittich Hall
Office Hours:	**By Appointment:** 02:00 PM – 04:00 PM on Tuesdays and Thursdays **Make an appointment:** https://aelfatmaoui.youcanbook.me/ *Default meetings are in-person at my office. If you need a Zoom meeting instead, email me after booking to request the change.*
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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 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.

Hands-on learning with real business applications | Industry-standard tools | Collaborative projects | Professional skill development

Overview

Prerequisites

English	**ENG 110** or **ENG 112**
Statistics	**STAT 145**
Program	**CBA Major**, **CASSH Economics Major**, or **Healthcare Analytics Management Minor**

Ensure all prerequisites are completed before enrolling in this course

Template date: August 2025

Course Learning Outcomes	Major/Minor Outcomes
By the end of this course, you will be able to:	**By the end of this course, you will be able to:**
1. ● Problem-Solving & Analysis Develop the ability to articulate a business problem or opportunity using qualitative and quantitative evidence and propose an analysis plan to identify potential solutions, including collection of primary data via surveys.	***Communication*:** Our students will be able to convey information and ideas effectively. Students will convey information and ideas in professional business reports, and students will convey information and ideas in oral presentations.
2. Data Analysis & Visualization Describe, summarize, and interpret data using descriptive statistics, inferential statistics, and data visualization.	
3. ☐ Technical Skill Develop foundational skills related to spreadsheets, interactive data visualization software, and scripting languages used for data analysis and visualization.	***Decision Making and Critical Thinking*:** Our students will be able to think critically when evaluating decisions. Students will evaluate alternatives and understand the ramifications of those alternatives within a given business context.
4. • Professional Communication Communicate the purpose, methods, and results of analysis to authentic audiences in appropriate written and oral formats.	
5. Research Excellence Apply research design and data analysis best practices to complete case-based projects and to critique others' analyses.	
6. Ethics & Privacy Describe current debates in research ethics and data privacy and the implications for business research.	● ***Social Responsibility*:** Our students will be prepared to be socially responsible citizens. Students will demonstrate the ability to consider the effects of business decisions on the entire social system.

Textbook and Materials

Textbook:

There is no official textbook for this course. All readings will be provided electronically via Canvas.

Software & Tools *(All FREE with your enrollment!)*

We will use the following software and instructional tools at no cost to you. Instructions for use will be provided in class and on Canvas as needed.

Data Analysis & Spreadsheets:

- **Excel** - Spreadsheet software for data analysis and visualization (available on campus computers)

Data Visualization:

- **Tableau Desktop** - Professional data visualization software (student license provided for personal computers + available on campus)

Programming & Statistical Analysis:

- **R and RStudio Cloud** - Programming language and web-based environment for data analysis and visualization (free cloud access)
- **DataCamp** - Online tutorials for learning R programming (free access while enrolled in this class)

Survey & Research Tools:

- **Qualtrics** - Online survey technology (available through your UWL student account)

General Productivity:

- **Microsoft 365** - Complete office suite including Word, Excel, PowerPoint, Outlook, Teams, and more (free access via web browser or installed applications)

Key Benefits:

- All tools are industry-standard software used by professionals
- Gain hands-on experience with employer-valued skills
- Technical support provided throughout the semester
- **No additional costs beyond tuition**

Course Format

Face-to-Face Course

This course is currently a face-to-face course. You may be asked to reference materials or participate online through Canvas.

Canvas Integration:

Everything in this course will be posted on Canvas *(Assignments, the schedule, a Weekly Agenda, etc).* You will need your **UWL NetID** to login to the course from the Canvas homepage.

Grading Policies

Your overall grade consists of the following assessments, arranged by type and value. The course is graded on a **point scale** that roughly corresponds to certain percentages of your total grade.

Grade Calculation:

For instance, the **Final Exam & Practicum is worth 20%** of your total grade.

*Grades received for the **Workforce Planning Case project** deliverables will be adjusted by your **Peer Evaluation score**.*

Assignment	Points (per assignment)	#	Total % Final Grade
Final comprehensive exam	100 Points total	1	**20%**
Homework and Labs (individual)	5 Points each	14	**20%**
Group Project	150 Points total	1	**35%**
Individual Project	25 Points each	5	**10%**
Quizzes (individual)	15 Points each	5	**15%**
Total Value			**100%**

Grading Scale:

LETTER GRADE	PERCENTAGE EQUIVALENT
A	93-100%
AB	89-92%
B	83-88%
BC	79-82%
C	70-78%
D	60-69%
F	59% - below

**Rounded up to closest whole number*

Late or Missed Assignments

This course involves many assignments and can require significant effort. I set deadlines for coursework (including readings) to help you stay on track throughout the semester.

Assignment Categories & Late Work Policy:

Flexible Deadlines:

- Homeworks and Labs - Accepted until the last day of class

Strict Deadlines:

- Quizzes
- Projects
- Group work
- Final Exam

Late work for these assignments will not be accepted except under extenuating circumstances.

Important Guidelines:

Extenuating Circumstances:	If you face situations that impact your ability to meet deadlines or participate in class activities, contact me as soon as possible so we can plan for make-up work.
Extension Agreements:	If I have agreed to an assignment extension via email, please note this in your submission comments.
Grading Limitations:	Late work cannot be accepted after I have returned graded work to the class and circulated answer keys.
Make-up Quizzes:	Generally not offered except under extenuating circumstances.

Pro Tip: Stay proactive with communication if you anticipate challenges meeting deadlines!

Attendance and Participation

Regular attendance is expected; however, I will not take attendance for a grade. For extenuating circumstances that impact your ability to participate in presentation days, you are responsible for alerting me as soon as possible so that we can plan for you to make up missed work.

Students will often work during class to complete short exercises over current material. Importantly, this course requires a **substantial amount of group work**, some of which will be done during class time. It is your responsibility to be present to contribute to your group. If you do not remain in contact with your group, you can expect that your peer feedback will be negatively affected.

Classroom Etiquette:

If you arrive to class late or leave early, please enter and exit the room quietly as not to distract your fellow classmates from the lab activity. Please let me know ahead of time if you can.

University Activities:

For those students who will be away for university-related functions such as athletic events or school-sponsored trips, please provide me with written notification of your absence prior to the missed class.

Expectations for Graded Work

Individual Feedback:	I provide students feedback and/or scores on assignments that require individualized grading before a further assignment of a similar format is due. Generally, I return work that requires individual feedback **within 10 days** from the date the work was due.

Delayed Grading:	I will notify you if I am unable to grade the work within the 10-day timeframe, and will identify a revised return date. If you submit work after the due date, it may not be returned within 21 days.
Electronic Grading:	The grades for any work that is graded electronically, such as scanned examinations, will be accessible to you **within 7 days** of the due date for the work.
Grade Return:	Your graded coursework will be returned in compliance with **FERPA regulations**, such as in class, during my office hours, or via the course management system through which only you will have access to your grades.

Artificial Intelligence (AI)

AI Use Permitted:

Artificial Intelligence (AI) tools and resources may be used for any assignments or activities in this course, provided that students use **appropriate attribution/citation**. Using AI throughout the course is okay for any assignment and labs.

AI Restrictions:

However, you **may not use AI tools in final exam**. Failing to provide appropriate attribution or citation will be a violation of course expectations and may be subject to UWL-La Crosse's academic misconduct policy.

Student Responsibility:

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 appropriately in this course, you are encouraged to discuss the situation with your instructor.

Course Outline and Schedule

Please note that the timing of activities and topics listed below may change. I will give you timely notice of any major changes in the syllabus by these processes: through email, on Canvas, in class, or some combination of methods.

Week	Date	Topic	Readings/Prep	Class Activity	Assignments Due	Learning Objectives
1	**Sep 3 (We)**	**Syllabus**	Read Syllabus	Syllabus Overview	Complete Survey (Extra Credit)	
2	**Sep 8 (Mo)**	**Baseline Data (and**	Readings & Study Guide - Level of Measurement	Lecture - Anatomy of a Data Set		LO 1-3

Week	Date	Topic	Readings/Prep	Class Activity	Assignments Due	Learning Objectives
		Computer) Literacy				
	Sep 10 (We)	**Lab**	LabPrep for Lab - Anatomy of a Data Set	Lab - Anatomy of a Data Set	Homework - Tidy Data Sets	
3	**Sep 15 (Mo)**	**Descriptive Statistics**	Readings & Study Guide - Measures of Central Tendency, Percentages and Measures of Variability	Lecture - Variables and Descriptive Statistics: Measures of Central Tendency, Percentages and Measures of Variability and Association		
	Sep 17 (We)	**Lab**	LabPrep for Lab - Preparing Variables in Tableau and Excel	Lab - Preparing Variables in Excel and Tableau	Homework - Variables & Summary Statistics: Earnings by Major Baseline Data (and Computer) Literacy Quiz	
4	**Sep 22 (Mo)**	**Basic Data Visualization**	Readings & Study Guide - Basic Data Visualization Part 1 & 2	Lecture - Basic Data Visualization - Part 2 Choosing the Right Graph; *Lecture - Basic Data Visualization - Part 1 (No Pies)	Facebook Analysis - Part 1 Excel	LO 1-3
	Sep 24 (We)	**Lab**	LabPrep for Lab - Basic Graphs in Excel and Tableau	Lab - Creating Basic Graphs in Excel and Tableau	Homework - Show Some Love Facebook Analysis - Part 2 Tableau	
5	**Sep 29 (Mo)**	**Communicating with Data**	Reading & Study Guide - Communicating with Data: In Writing	Lecture - Data Visualization Critiques and Communicating with Data: In Writing	Homework - When Do Students Eat; Basic Data Visualization Quiz	
	Oct 1 (We)	**Communicating with Data**	Reading - Communicating with Data: Orally; Communicating with Data: Documenting Work	Lecture - Communicating with Data: Orally		LO 1, 4, 5
6	**Oct 6 (Mo)**	**Team Project Formation**	Submit your group name and member names for Team Project	Individual Presentation (Graded Individual Project)	Submit your group name and member names for Team Project	

Week	Date	Topic	Readings/Prep	Class Activity	Assignments Due	Learning Objectives
	Oct 8 (We)	**R Programming**	LabPrep for Simple Graphs and Descriptive Statistics in R	Lab - Simple Graphs and Descriptive Statistics in R		
7	**Oct 13 (Mo)**	**Statistical Foundations of Data Analysis**	Readings & Study Guide - Why do we need Inferential Statistics?	Lecture - Why do we need Inferential Statistics?	Facebook Analysis - Part 3 Communication	
	Oct 15 (We)	**Hypothesis Testing**	Readings & Study Guide - Review of Hypothesis Testing and Confidence Intervals	Lecture - Review of Hypothesis Testing and Confidence Intervals - Part 1		LO 2-3
8	**Oct 20 (Mo)**	**Confidence Intervals**		Lecture - Review of Hypothesis Testing and Confidence Intervals Part 2	Homework - Illustrating Precision of Estimates with Confidence Intervals	
	Oct 22 (We)	**R Statistics Lab**	LabPrep for Lab - Statistics in the Tidyverse Part 1	Lab - Statistics in the Tidyverse Part 1	Facebook Analysis - Part 4 R	
9	**Oct 27 (Mo)**	**Advanced R Statistics**		Lab - Statistics in the Tidyverse Part 2	Statistical Foundations of Data Analysis Quiz	
	Oct 29 (We)	**Team Project**	Read Analysis Plan Outline; Review Two weeks survival Guide	Launch Team Project	Team Meeting #1 Minutes	LO 1-7
10	**Nov 3 (Mo)**	**Team Project: Data Cleaning**		Team Project: Data Cleaning	Coding Road Map; Team Meeting #2 Minutes	
	Nov 5 (We)	**Team Project: Lab**		Team Project: Lab	Team Meeting #3 Minutes; Team Project R Script	
11	**Nov 10 (Mo)**	**Team Project: Self-work**		Team Project: Self-work	Team Project Slides	
	Nov 12 (We)	**Advanced Analytics and Survey Design**		Lecture-Analytics and Survey Design	Homework - Design a Dashboard; Homework - Survey Makeover	

Week	Date	Topic	Readings/Prep	Class Activity	Assignments Due	Learning Objectives
12	Nov 17 (Mo)	Ethics		Lecture - Ethics		LO 6
	Nov 19 (We)	Team Project		Virtual Coaching		
13	Nov 24 (Mo)	Team Project (self-work)		Team Project (self-work)	Ethics Quiz; Intro to Advanced Analytics and Survey Design Quiz	
	THANKSGIVING BREAK - November 27, 2025 (Thanksgiving Day) | Semester Break begins 5:30pm Wednesday, November 26, 2025					
14	Dec 1 (Mo)	Classes Resume		Workday - Catching up with the assignments		
	Dec 3 (We)	Team Presentation		Team Presentation		LO 6
15	Dec 8 (Mo)	Team Presentation		Team Presentation		LO 6
	Dec 10 (We)	Review for Final		Review for Final		LO 1-7
	FINAL EXAM - December 15, 2025 (Monday) | Wing 6 | 4:45PM - 5:45PM					

Important Semester Dates

- **First Day of Class:** September 3, 2025
- **Holidays:** November 27, 2025 (Thanksgiving Day)
- **Semester Break:** Begins 5:30pm Wednesday, November 26, 2025. Classes resume Monday, December 1, 2025
- **Last Day of Class:** December 10, 2025
- **Study Day:** December 11, 2025
- **Finals:** December 12-17, 2025
- **Final Exam:** December 15, 2025 (Monday) | Wing 6 | 4:45PM - 5:45PM

UWL Syllabus Policy Information & Statements

UWL encourages students to know the campus' important policies and statements which can be found on the Syllabus Information website.

- Academic integrity and misconduct

- Classes during inclement weather
- Religious accommodations
- Sexual misconduct
- Student course and faculty-related concerns, complaints, and grievances
- Student survey on instruction (LENS)
- Students with accommodation needs
- University class attendance policy
- Veterans, active military, and military-connected

Individual instructors will articulate course requirements and any additional policies in the course syllabus and/or on a Canvas site associated with the course. UWL also encourages students to take advantage of the campus' many and varied student success resources.

UWL Policies & Supports

PRO@UWL (Progress Report Online via Navigate)/Student Success Policy

If I notice that you are experiencing difficulties early in the semester (e.g., low assignment scores or limited participation), I may provide you feedback through Navigate, UWL's success system, and you will receive notification indicating that I have entered feedback. I encourage you to meet with me and/or utilize helpful campus resources listed on UWL's Student Success website.

Course Access

Access to course materials in Canvas may cease after the term ends. If you wish to archive materials for your personal records or portfolio you should do so as you progress through the course. As a general rule, you should always save local copies of course-related work. To avoid disasters, you should also save important files to external media or cloud storage.

Inclusive Excellence

UWL's core values include "Diversity, equity, and the inclusion and engagement of all people in a safe campus climate that embraces and respects the innumerable different perspectives found within an increasingly integrated and culturally diverse global community." If you are not experiencing my class in this manner, please come talk to me about your experiences so I can try to adjust the course if possible.

Name/Pronouns

I will do my best to address you by a preferred name or gender pronoun that you have identified. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. UWL has a preferred name policy and UWL's Pride Center is available for additional assistance.

Academic Success and Overall Health

At UWL, we support your academic success and overall health. We know that students often experience a range of stressors that can impact learning and well-being. If you or someone you know is experiencing mental health concerns,or could benefit from effective academic strategies, there are free and confidential resources available to enrolled students through the Counseling & Testing Center (CTC). To learn more, visit CTC's website or call 608-785-8073.

Technical Support

For tips and information about Canvas visit the UWL Canvas Guide for students; this site also links to the 24/7 Canvas support. Check your browser compatibility with Canvas. If you are having Canvas login issues or need general computer assistance, contact the Eagle Help Desk.