

ECON 3406: Statistics for Business II (Spring 2026)

General Course Information

Instructor:	Dr. Joshua Martin	Email:	joshua@westga.edu
Office:	338 Roy Richards Sr. Hall	Office Hours:	MW 9:00-10:00am; 3:00-5:00pm
Course Delivery:	In-Person	Section:	02
Meetings:	MW 12:00-1:15pm	Location:	201 Roy Richards Sr. Hall

Prerequisite

(ECON 3402 or MATH 1401) and MATH 1413

Course Description

This course introduces intermediate quantitative tools for strategic and data-driven decision-making in business. Topics include probability, hypothesis testing, statistical inference, linear regression, multiple regression, logistic regression, and simulation analysis.

In addition to developing a solid foundation in statistical theory, students will gain hands-on experience using *R*, an open-source statistical programming language widely adopted in both industry and research. Emphasis is placed on interpreting statistical results, visualizing and analyzing real-world data, and communicating findings effectively.

To support the transition into statistical programming, students will also gain guided exposure to the use of Large Language Models (e.g., “artificial intelligence”) as supplementary tools for learning, troubleshooting, and code interpretation.

Course Textbook

David M. Diez, Mine Çetinkaya-Rundel, and Christopher D. Barr. [OpenIntro Statistics](#) (Fourth Edition)

Course Goals

The learning goals for this course are as follows:

1. Recognize the importance of data collection, identify limitations in data collection methods and other sources of statistical bias, and determine their implications and how they affect the scope of inference.
2. Use statistical software to summarize data numerically and visually, and to perform data analysis.
3. Have a conceptual understanding of the unified nature of statistical inference.
4. Apply estimation and testing methods to analyze single variables or the relationship between two variables in order to understand natural phenomena and make data-based decisions.
5. Model numerical response variables using a single explanatory variable or multiple explanatory variables in order to investigate relationships between variables.
6. Interpret results correctly, effectively, and in context without relying on statistical jargon.
7. Critique data-based claims and evaluate data-based decisions.

Electronic Devices

- Students may use professor-approved electronic devices, such as laptops and tablets, to aid in note-taking.
 - Phones (and headphones!) are not permitted for this purpose.
 - Students who need to text or make a call should step outside the classroom.
 - Any student whose device disrupts their peers will be held accountable, with the form of compensation determined by the professor in consultation with the class (often cookies).
- Lecture slides will be provided to students in advance, and in return, students are asked not to record or photograph during lectures.
- Failure to follow these rules, including repeated warnings, may result in course failure and expulsion.

Expectation of Course Attendance

- Students are expected to attend class regularly, remain actively engaged, take notes, and participate in collaborative discussions with their peers.
 - The grading system is intentionally structured to discourage extended periods of unexcused absences.
- Absences will only be excused with appropriate documentation from a medical professional or a relevant UWG employee.

Evaluation Policies

- Quizzes
 - Closed-book; administered via scantron in-person during class time
 - Students will be allowed access to no other materials aside from pencils and rubber erasers without prior approval from the professor
 - Cover material from the previous lecture
 - Consist of 5 multiple choice questions and must be completed within 15 minutes
 - Students may elect to work alone or in groups (of no more than 5) that are selected randomly by the professor
 - There will be no make-ups for missed quizzes
 - Missed quizzes that occur due to excused absences will be replaced with the average of remaining quiz scores
 - Blatantly tardy students will receive a grade of zero
- Exams
 - Closed-book; administered via scantron in-person during class time
 - Students will be allowed access to no other materials aside from pencils and rubber erasers without prior approval from the professor
 - Requests for early access to exams will be evaluated on a case-by-case basis
 - There will be no make-ups for missed exams
- Any suspected cheating/suspicious behavior will result in a zero on the exam/quiz and may lead to course failure and expulsion

Grade Scale

Grade	Range
A	[90,100+)
B	[80, 90)
C	[70, 80)
D	[60, 70)
F	[0, 60)

Grading

• Quizzes

- There will be 25 quizzes administered throughout the term, each worth 1.25 points.
- Of these, ~5 quizzes are provided as bonus opportunities, allowing students to earn extra credit.
- In return, the quiz score is adjusted based on attendance.

Let n represent the number of consecutive unexcused absences; n resets upon a student's return to class.

$$Quizzes = \begin{cases} 1.25 \times \sum_{q=1}^{25} Quiz_q & \text{if } n = 0, \\ \left(1.25 \times \sum_{q=1}^{25} Quiz_q \right) - \sum \left(\frac{2^n}{2} + \dots \right) & \text{if } n > 0, \end{cases}$$

where $0 \leq Quizzes \leq 25 \times 1.25$

• Exams

- There will be 4 exams and a comprehensive final, each worth 15 points.
- The final exam is mandatory; failure to complete it results in an automatic course failure.
- If $Final > 0.6$, it may replace your lowest midterm score **if it is higher**; otherwise, it counts as any other exam.

$$Exams = \begin{cases} 15 \times \sum_{e=1}^5 Exam_e & \text{if } Final \leq 0.6, \\ 15 \times \left(\sum_{e=1}^4 Exam_e - \min(Exam_e) \right) + 30 \times Final & \text{if } Final > 0.6. \end{cases}$$

• Exam Curves

- I write exams to be challenging, so I apply a consistent curve to keep the grading scale fair and to avoid “extra credit–style” outcomes where top scores vastly exceed 100. The curve has two goals: (i) the highest-scoring student is mapped to 100, and (ii) the curved class average is mapped to approximately 80.
- This target average is set at the instructor's discretion, reflecting the expectation that the average student performance corresponds to a final course grade of B. Accordingly, the target may be adjusted if warranted by overall class performance.
- To do this, I use a “standardized” transformation that compresses the top end and lifts the middle of the distribution.

Let T be the total questions on the exam, and let m_i be the number of questions that student i missed. Let m_{min} be the fewest number of questions missed by any student (i.e., the best performance). The curved exam percentage is:

$$s_i = \frac{T - (m_i - m_{min})}{T}$$

$$g_i = 0.8 + \frac{sd(s_i)}{\alpha} \times \frac{(s_i - \bar{s}_i)}{sd(s_i)}$$

where the larger value of g_i and s_i ($\leq 100\%$) is the multiplied by the assignment point total, and where α is the smallest value (≥ 1) which provides a maximum exam grade of 100%.

- **Overall Grade:** $FinalGrade = Exams + Quizzes$

Course Schedule

Date	Readings	Material Covered	Due
01/12/2026	<i>Syllabus</i>	Intro to course and R	
01/14/2026	Ch. 1 (1.1–1.2)	Experimental design	Quiz 1
01/19/2026	<i>MLK Day</i>		
01/21/2026	Ch. 1 (1.3)	Data fundamentals	Quiz 2
01/26/2026	Ch. 2 (1.4)	Summary statistics	Quiz 3
01/28/2026	Ch. 2 (2.1)	Data generating process	Quiz 4
02/02/2026	Ch. 2 (2.2)	Variance and distributions	Quiz 5
02/04/2026	Ch. 2 (2.3)	Outliers and data transformations	Quiz 6
02/09/2026	—		Exam 1
02/11/2026	Ch. 3 (3.1)	Defining probability	Quiz 7
02/16/2026	Ch. 3 (3.2)	Conditional probability	Quiz 8
02/18/2026	Ch. 3 (3.4)	Expectation operators	Quiz 9
02/23/2026	Ch. 4 (5.1)	Point estimates	Quiz 10
02/25/2026	Ch. 5 (5.2)	Confidence intervals	Quiz 11
03/02/2026	Ch. 5 (5.3)	Hypothesis testing	Quiz 12
03/04/2026	—		Exam 2
03/09/2026	Ch. 6 (6.1–6.2)	One- & two-proportion inference	Quiz 13
03/11/2026	Ch. 6 (6.3)	Chi-square goodness-of-fit	Quiz 14
03/16/2026	<i>Spring Break</i>		
03/18/2026	<i>Spring Break</i>		
03/23/2026	Ch. 6 (6.4)	Chi-square tests of independence	Quiz 15
03/25/2026	Ch. 7 (7.1–7.2)	One- & paired-sample t-tests	Quiz 16
03/30/2026	Ch. 7 (7.3–7.4)	Two-sample t-tests; power analysis	Quiz 17
04/01/2026	Ch. 7 (7.5)	ANOVA: comparing multiple means	Quiz 18
04/06/2026	—		Exam 3
04/08/2026	Ch. 8 (8.1)	Linear fit & correlation	Quiz 19
04/13/2026	Ch. 8 (8.2–8.3)	Least squares regression; outliers	Quiz 20
04/15/2026	Ch. 8 (8.4)	Regression inference	Quiz 21
04/20/2026	Ch. 9 (9.1–9.2)	Multiple regression	Quiz 22
04/22/2026	Ch. 9 (9.3–9.4)	Regression diagnostics; case study	Quiz 23
04/27/2026	Ch. 9 (9.5)	Logistic regression basics	Quiz 24
04/29/2026	—		Exam 4
05/04/2026	<i>Flex day</i>		Quiz 25
05/06/2026	—		Final Exam

Accessibility Services

Students with a documented disability may work with UWG Accessibility Services to receive essential services specific to their disability. All entitlements to accommodations are based on documentation and USG Board of Regents standards.

If a student needs course adaptations or accommodations because of a disability or chronic illness, or if they need to make special arrangements in case the building must be evacuated, the student should notify their instructor in writing and provide a copy of their Student Accommodations Report (SAR), which is available only from Accessibility Services. Faculty cannot offer accommodations without timely receipt of the SAR; further, no retroactive accommodations will be given.

For more information, please contact [Accessibility Services](#).

Communication

- Face-to-face communication is strongly preferred to email correspondence
 - I request that non-urgent questions be reserved to times in the classroom or during office hours
 - I can provide a Zoom meeting link on Course Den for virtual office hours if requested
- Include your name, course and section when emailing

Roster Verification

In order to be counted as having attended class during the roster verification period, you must complete at least one quiz by January 28, 2026. If I mark you as not-attending for a course, you will receive a 'W' grade. Please contact me for more information or if you believe you were marked as not-attending in error.

UWG Email Policy

All UWG students are provided a MyUWG email account through Gmail. This is considered the official method of communication between the university and students. Students are responsible for checking their email regularly.

Center for Academic Success

The [Center for Academic Success](#) provides services, programs, and opportunities including academic coaching, peer tutoring, drop-in tutoring and supplemental instruction to help all undergraduate students succeed academically.

For more information, contact them: (678) 839-6280 or cas@westga.edu.

Artificial Intelligence Use Policy

Use of Gen AI tools is not permitted for any graded assessments in this course. Submitting work generated by AI will be treated as plagiarism and handled in accordance with the academic and disciplinary policies outlined in the UWG Honor Code (see: [Student Handbook](#)).

That said, Gen AI tools – such as OpenAI's ChatGPT – will be incorporated in class activities to support learning. For example, I may use AI to generate commented versions of code demonstrated in class, explaining each function and its purpose. This use is intended to help you focus on understanding statistical theory while still gaining confidence with coding concepts and syntax.

Technology Requirements

As part of this course, we will need reliable access to the internet and technology to be successful. The Ingram Library on the Carrollton campus has public computers with internet access available. The UWG Newnan campus has public computers with internet access available for students.

General technical skills and proficiencies necessary to be successful in the course include: Accessing and using CourseDen as a learning management platform; Communicate by email with attachments; Create and submit files using word processing software

Minimum Technology Requirements include: Reliable access to a PC, Mac, Chromebook, or tablet; A webcam with speakers or headphones; High speed internet connection; Up-to-date Chrome, Firefox, or Safari browsers; CourseDen access; Microsoft Word or Google Docs access

Technology Support and Guidance Available for Students: [TechWest Student ITS Support](#); [UWG Online](#); [24/7 CourseDen \(Brightspace D2L\) support](#)

Mental Health Support

If you or another student are experiencing a mental health issue, free and confidential services are available through the [Counseling Center](#).

Students who have experienced sexual or domestic violence can access confidential support through Patient Advocates in [Health Services](#).

To report a concern anonymously, please visit [UWG Cares](#).

English Language Learning (ELL) Resources

If you are having difficulty with English or U.S. academic culture, specialized resources are available to help you succeed. Visit the [ELL Resource Page](#) for more information.

Honor Code

At the University of West Georgia, we believe that academic and personal integrity are based upon honesty, trust, fairness, respect, and responsibility.

Students at West Georgia assume responsibility for upholding the honor code. Students pledge to refrain from engaging in acts that violate academic and personal integrity. These include, but are not limited to, plagiarism, cheating, fabrication, aiding academic dishonesty, lying, bribery or threats, and stealing.

Academic Dishonesty Tracking System

UWG maintains and monitors a confidential Academic Dishonesty Tracking System that collects and reports patterns of repeated violations across all colleges, the Ingram Library, and the School of Nursing. Each incident is reviewed by the instructor and may result in academic penalties including, but not limited to, failing the assignment or the course. Conduct sanctions may range from a warning to suspension or expulsion.

Students are responsible for safeguarding their computer accounts. All actions originating from their account or network connection are their responsibility. Impersonation or misrepresentation of identity is prohibited.

For more details, see the [Student Handbook](#).

Credit Hour Policy

UWG grants one semester hour of credit for work equivalent to a minimum of one hour (50 minutes) of in-class instruction and two hours of out-of-class student work per week for approximately fifteen weeks.

Each syllabus must document the in-class and out-of-class requirements to earn the assigned credit hours. Out-of-class work may include assignments, readings, observations, or musical practice.

Credit may also be granted via competency-based testing (e.g., AP, CLEP, or departmental exams) that demonstrates mastery of course outcomes.

Changes to the Syllabus

I reserve the right to modify the course schedule or content as necessary to support the learning objectives of the class. Any such changes will be communicated in advance and will only be made in ways that are beneficial to students, such as reducing the scope of material covered or delaying assignment due dates.

Title IX & Equal Opportunity

University of West Georgia faculty are committed to helping create a safe and open learning environment for all students. If you (or someone you know) have experienced any form of sexual misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available. The University strongly encourages all members of the community to take action, seek support, and report incidents of sexual misconduct to the [Office of Title IX & Equal Opportunity](#). Please be aware that under Title IX of the Education Amendments of 1972, I am required to disclose information about such misconduct to the Office of Title IX & Equal Opportunity. If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact the University of West Georgia Counseling Center (678-839-6428) or Advocate Services (470-215-9946).

Preferred Pronouns Statement

At UWG everyone has the right to be addressed by the name and personal pronouns that correspond to their gender identity, including non-binary pronouns, for example: they/them/theirs, ze/zir/zirs, etc. As of 2023, students can update their pronouns in their Self-Service Banner user settings. If you have not yet updated your pronouns in Self-Service Banner, you can do so at the beginning of the term so that I can make sure to refer to you using the correct pronouns. If your pronoun set is not available in Self-Service Banner/CourseDen, please let me know. I recognize that preferred names and pronouns may change during the semester, if at any point during the semester you would like to be addressed differently, please let me know.