Data and Decisions: Applied Statistics Course Syllabus

WESTERN GOVERNORS UNIVERSITY

Data and Decisions: Applied Statistics

Hello, and welcome!

Mathematics is the language of modern decision-making. In this course, you will learn how to translate real-world questions into data. You will choose and apply the right quantitative tools. Then, you will communicate clear, defensible conclusions. Math concepts are key in budgeting, health metrics, risk, forecasting, and other tasks. So, you will practice the math that shows up in life, work, and school. Using a "Math-in-Context" design and AI-aware approach, you will tackle problems from business, IT, healthcare, education, and general education topics. You will learn to frame questions and select methods. You will also learn to verify assumptions, assess bias, and tell a data-driven story. As a result, you will acquire practical, transferable mathematical skills. These foster confidence and competence in both academic and professional settings.

We invite you to take a minute to learn about the course by reviewing the information that follows. This way, you will be better able to understand the expectations of the course as a whole. Then you can determine how to manage your time and efforts as you navigate through it.

You are in the right place. You belong here. You can do this!

Course Description and Competencies

WHAT TO EXPECT

In this course, you will work through four modules. Throughout the material, you will find readings, videos, and reflection questions. You will also find knowledge checks that help you test your understanding. Engaging with these activities reinforces new learning. It also complements the knowledge you bring to this area of study.

This course covers the following competencies:

1. The student applies quantitative operations to solve real-world problems.
2. The student interprets real-world data using graphical displays and descriptive statistics.
3. The student analyzes relationships between variables
4. The student explains how probability represents uncertainty in real-world situations.

Assessment

The assessments provide an opportunity to demonstrate your mastery of the competencies in this course. You may attempt the assessments two times before additional support is necessary. If you require further attempts, please contact your Course Instructor or Student Experience Specialist.

♦ **4** final exams ♦ **3** competency units

Course Outline

Module	Upon completion of this module, you will be able to:
My Thriving Mindset	A. Define the characteristics of a thriving mindset. B. Describe how neuroplasticity facilitates a thriving mindset. C. Explain how biological responses to perceived threats disrupt a thriving mindset. D. Describe personal values and sources of student motivation. E. Develop study-related goals using the SMARTER framework. F. Describe strategies to increase self-efficacy and resilience.
Foundational Math & Quantitative Skills	A. Apply number sense to rational and real numbers when working with expressions. B. Simplify numeric and algebraic expressions involving exponents and square roots. C. Determine integer factors, multiples, and prime-based factorizations, including GCF, LCM, and LCD. D. Solve quantitative situations involving fractions, decimals, and percents. E. Solve contextual problems involving ratios, rates, and proportional relationships. F. Solve linear equations in one variable from numeric and applied contexts. G. Represent solutions to linear inequalities in one variable on a number line.
Interpreting Data	A. Classify data in a scenario as categorical or numerical, including discrete and continuous types. B. Interpret information from graphs. C. Identify patterns, including trends, clusters, gaps, and outliers, in histograms, box plots, and two-way tables. D. Describe distributions in graphical displays using shape, center, spread, and overall pattern.

	E. Analyze measures of center and spread, including quartiles and five-number summaries, for numerical datasets. F. Compare groups by examining their graphical displays and descriptive statistics.
Relationships Between Variables	G. The student distinguishes explanatory (independent) and response (dependent) variables in real-world scenarios. A. Describe the direction, form, strength, and unusual features of relationships between variables on a scatterplot. B. Evaluate correlation for direction, strength, and limitations for making causal claims. C. Explain the slope and intercept of a regression line as rate of change and baseline values in context. D. Analyze relationships between variables in real-world scenarios.
Probability & Uncertainty	A. Interpret probability as a numerical measure of how likely an event is to occur. B. List possible outcomes and sample spaces for simple chance situations. C. Calculate relative frequencies from data to approximate event probabilities. D. Compare the likelihood of events using probability values and contextual statements. E. Explain uncertainty in everyday situations using appropriate probability language. F. Interpret relationships between events from tables, two-way tables, and Venn diagrams.

Sources

This course was built using the following resources:

College Algebra 2e

Introductory Statistics

Prealgebra 2e

Statistics

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Technology Requirements

We want you to have the tools to succeed! Since this course includes at least one proctored test, please be sure to have a working microphone, speakers, and a webcam.

You will need Adobe Acrobat Reader DC. If you haven't already, download this free software. You may encounter an interactive form that contains fields that you can select or fill in. Review how to fill in a PDF form.

You are allowed to use a **hand-held calculator** on every assessment. Be sure to follow these calculator requirements.

For other details about the technology you'll need, review the Computer System and Technology Requirements. If you have questions about your setup, contact support@academy.wgu.edu.

Key Contacts

Course Connect	Check out this online community to take advantage of course resources, including videos and tips from your educators. You can ask and answer questions, provide feedback on your progress, and interact with fellow students. You will find this platform in the Student Resources section of the course. Log on and do some exploring!
Tutor.com	If you need academic support, don't hesitate to contact Tutor.com. There, you have access to thousands of tutors. And they are available 24/7 from any internet-ready device. You can also benefit from instructional videos, study tools, and other assistance.
Technical Support	If you encounter technical issues, be sure to contact the Help Desk. Just submit a Support Request for assistance.
Program Support	Do you have questions about your account? Student Support has answers. They can help with billing, switching courses, and other requests. You can contact them at (888) 320-0540 or support@academy.wgu.edu.

Accommodations

WGU provides compliant and accessible learning experiences. If you require accommodation, please contact us at the start of the course. You can email disability@academy.wgu.edu or call (888) 320-0540. We are committed to ensuring that all students with disabilities have equal access to WGU's services and materials. We strive to use best practices for accessibility. Our goal is to conform to existing U.S. laws. These include the Americans with Disabilities Act and Section 504 and Section 508 of the Rehabilitation Act. Our learning management system (LMS) platform is Open edX. Open edX's commitment to accessible content is published on their Website Accessibility Policy.