Your competence will be assessed as you complete the GET2 performance assessment. This course of study may take up to six weeks to complete.

Introduction

This course of study is aligned to the GET2 performance assessment. The same study materials are utilized in the GEC2 objective assessment. If you have previously completed the GEC2 assessment, then you should have already completed the required study activities found in this course of study. You may wish to review the assignments here, but you are not required to repeat these activities. If you have not yet completed the GEC2 assessment, then please proceed through this course of study in full.

Overview
This component of your work is designed to help you gain a broad overview of the field of probability and statistics, with a fundamental understanding of some key concepts and principles. Probability and statistics are key topics that are increasingly addressed earlier in the mathematics curriculum, so the chances are great that you will end up teaching these principles.

Outcomes and Evaluations
There are three competencies covered by this course of study; they are listed in the "Competencies for Probability and Statistics I" page.

Teaching Dispositions Statement
Please review the Statement of Teaching Dispositions.

You will complete the following assessments as you work through the course of study.

Performance Assessment
You will complete the following performance assessment in TaskStream:

- GET2

Previews of task instructions and rubrics for this assessment are available in via the 'Assessment Preparation' box in the online course of study.

Preparing for Success

The information in this subject section is provided to help you become ready to complete this course of study. As you proceed, you will need to be organized in your studies, competent in the indicated areas, and ready to pass the final assessments.

Your Learning Resources
Enroll in or order the learning resources for this course as early as possible so as to give them time to arrive and give you enough time to become familiar with them.

Enroll in Learning Resources
You will need to enroll in or subscribe to additional learning resources as a part of this course of study.

You may already have enrolled in these resources for other courses. Please check the "Learning Resources" tab and verify that you have access to the following learning resources. If you do not currently have access, please enroll or renew your enrollment at this time.

Note: For instructions on how to enroll in or subscribe to learning resources through the "Learning Resources" tab, please see the "Acquiring Your Learning Resources" page.

**MyMathLab ("Elementary Statistics")**
Enroll in Triola's *Elementary Statistics* 11th Ed. This is an independent study course provided to you by WGU. The MyMathLab learning resource provides videos, practice problems, and quizzes. The following e-text is also provided:


*Note: The answers to odd-numbered exercises are found in the back of the text.*

**Atomic Learning Library**
Atomic Learning Library provides web-based software training for more than 100 applications students and educators use every day, including short, easy-to-view-and-understand tutorials on Geometer’s Sketchpad and TI graphing calculators.

Use the following information to log in to the Atomic Learning Library:

- Username: wgu
- Password: atomic

**Graphing Calculator**
Acquire a graphing calculator and familiarize yourself with how to use it. Refer to WGU Calculator Guidelines for details regarding calculators that are acceptable on WGU exams and to WGU Calculator Recommendations for calculator suggestions for your program.

**Additional Preparation**
There are many different learning tools available to you within your course of study in addition to the learning resources discussed above. Some or all of them may be very useful to you as your progress through this course of study. Take the time to familiarize yourself with them and determine how best to fit them into your learning process.

**Message Boards, FAQs, Note-Taking Tool**
Message boards, learning communities, study notes, and FAQs are available in every course of study.

Use the "Additional Learning Tools" document to review these tools.
The WGU Central Library

The WGU Central Library is available online to WGU students 24 hours a day. The library offers access to a number of resources, including over 60,000 full-text e-books; articles from journals, magazines, and newspapers; course e-reserves; and tutorials on how to use these resources and the library. The library also includes a reference service for help with research questions or navigating the library. Please log in to your student account to use this resource.

Course Mentor Assistance

Course mentors are available to help you. Their job is to aid understanding in areas where you need to improve and to guide you to learning resources. Request their help as needed when preparing for assessments.

Course mentors cannot provide reviews of entire assessments. If you fail assessment attempts, review the provided feedback first, then ask the course mentor specific questions about what you can do to meet the competency standard. Request course mentor assistance as necessary in preparing for second attempts at objective assessments or performance task revisions. Mentors cannot guarantee you pass as they do not evaluate assessments; however, they can provide the assistance and advice necessary to help you succeed.

Best Practices Tool: Get a Study Notebook

It is suggested that you create a paper or digital notebook for your study notes as you go through this document. You have the ability to take notes online through the web enabled course of study. You may want to include a glossary, study notes, topics to revisit, and helpful websites.

Take the Pre-Assessment

The pre-assessment assesses your knowledge of the content covered in this course of study. Your performance on this assessment will help guide you to the areas on which you need to focus the most attention.

Pre-Assessment

Complete the following pre-assessment:

- PGEC

For directions on how to receive access to pre-assessments, see the "Accessing Pre-Assessments" page.

Coaching Report

Once you have completed the pre-assessment, you will receive access to a coaching report indicating how you performed on particular topics covered. A link to the coaching report is available in the "Assessment" tab in the upper left-hand side of your screen.

Elementary Statistics Overview

The first few sections of this course of study will cover the many different types of data. First you
will learn how to go about collecting data and then learn how best to display the data you have collected. During this subject, a variety of relevant questions will be addressed:

- What are the characteristics of a well-designed and well-conducted investigation?
- What are the different types of data that you may encounter during an investigation?
- How can you identify common misuses of statistics using a critical thinking process?
- What are frequency distributions, histograms, and scatter plots?
- Which method should you select to organize and summarize a set of data in an appropriate manner?
- How do you use a variety of graphical representations in such a way so that they can support your claims?
- How do you acquire and use quantitative measures of the center, dispersion, and relative standing?
- How do you use a variety of descriptive statistics in such a way so that they can support your claims?

Think about these questions as you engage in the activities. Be sure to record your thoughts, questions, and subsequent answers in your study notebook for later review prior to the assessments.

Introduction to Statistics

You will be provided with a review of relevant introductory statistics concepts, the types of data that you may encounter, the critical thinking process, and the elements of experimental design. You will start to get into the nuts and bolts of data collection and analysis. These concepts form the basis for further extension into more advanced topics.

Read the following sections from *Elementary Statistics* in MyMathLab and complete the assigned exercises:

- 1-1 ("Review and Preview") no exercises.
- 1-2 ("Statistical Thinking") exercises 1-6 all and 19-22 all.
- 1-3 ("Types of Data") exercises 1, 3, 5, 7, 13, 15, 21-29 all, and 35.
- 1-4 ("Critical Thinking") exercises 1-19 odd numbers only
- 1-5 ("Collecting Sample Data") exercises 1-25 odd numbers only.

Summarizing and Graphing Data

You will be provided with an overview of relevant chapter concepts, frequency distributions, histograms, scatter plots, and other interesting graphical representations. Throughout this section’s studies, ask yourself if you can tell the difference between these data displays and, more importantly, when each would be most appropriate to use. Can you create them? Can you interpret them?

Read the following sections from *Elementary Statistics* in MyMathLab and complete the assigned exercises:
Statistics for Describing, Exploring, and Comparing Data

You will be provided with a review of relevant chapter concepts, measures of center, measures of variation, measures of relative standing, and exploratory data analysis. Consider the following questions:

- In what ways can you quantify the center of a set of data?
- In what ways can you quantify the overall spread of a set of data?
- How can you best present data?
- Are some graphical representations more appropriate than others?

Think about these questions as you engage in the activities and record your thoughts and answers in your study notebook.

Statistics for Describing, Exploring, and Comparing Data

Read the following sections from *Elementary Statistics* in MyMathLab and complete the assigned exercises:

- 3-1 ("Review and Preview") no exercises
- 3-2 ("Measures of Center") exercises 1-23 odd numbers only; 29, 33, 34
- 3-3 ("Measures of Variation") exercises 5-19 odd numbers only
- 3-4 ("Measures of Relative Standing and Boxplots") exercises 3, 4, 27-30 all

Using Your Graphing Calculator to Find Single-Variable Statistics

Go to the following link to find directions to an Atomic Learning tutorial for finding Single-Variable Statistics with your TI calculator.

- [Mathematics Technology Tips document](#)

### Elementary Probability

The activities for this subject will introduce you to a variety of elementary probability concepts. There are a variety of topics that you should review prior to a more in-depth exploration of probability.

During this subject, a variety of relevant questions will be addressed:

- What is probability?
- In what ways can discrete probabilities be combined under the operation of addition or multiplication? You will need to understand how to combine probabilities using the addition or multiplication rule to compute probabilities in selected applications.
- In what ways can graphical representations be used to describe selected probabilities?
• How are specific counting practices used to generate probabilities in selected applications?
• How can simulations be used to generate probabilities?

These are just a few of the important topics that will be covered in this section.

Think about these questions as you engage in the activities. Record your thoughts and answers in your study notebook.

**Probability**

You will be provided with a review of relevant chapter concepts, fundamental probability concepts, the addition rule, the multiplication rule, complements and conditional probability, probability through simulations, and counting. Consider the following questions: When is it appropriate to use each of these rules? When is it inappropriate to do so? Record your thoughts and answers in your study notebook.

**Probability**

Read the following sections from *Elementary Statistics* in MyMathLab and complete the assigned exercises:

• 4-1 ("Review and Preview") no exercises
• 4-2 ("Basic Concepts of Probability") 1-35 odd numbers only
• 4-3 ("Addition Rule") exercises 1-37 odd numbers only

*Note the tree diagram on page 160. Also complete the exercises at the following site: [OnlineMathLearning.com](http://OnlineMathLearning.com)*

• 4-4 ("Multiplication Rule: Basics") exercises 5-29, odd numbers only
• 4-5 ("Multiplication Rule: Complements and Conditional Probability") exercises 1-27, odd numbers only
• 4-6 ("Probabilities Through Simulaions") exercises 1-7, odd numbers only
• 4-7 ("Counting") exercises 1-35, odd numbers only

Complete the exercises at the following website: [Review Exercises](http://ReviewExercises.com)

**Using Your Graphing Calculator to Find Permutations and Combinations**

Go to the following link to find directions to an Atomic Learning tutorial for finding permutations and combinations with your TI calculator.

• [Mathematics Technology Tips document](http://MathematicsTechnologyTips.com)

**Geometric Probability**

Read the information about geometric probability on the following website, and then watch the video in the second link. The third link has some practice problems with links to solutions.
• Introduction to Geometric Probability
• Video Instruction on Geometric Probability
• Practice Problems with links to solutions

Note: The second practice problem has a typo. It should say that the radius of the circle is 3, not the diameter.

Probability and Statistics I, Task 1
You now have the competency necessary to complete Probability and Statistics I, Task 1. The following activities include resources that may be helpful as you complete this task.

Probability and Statistics I, Task 1 Readiness Check: Birthday Simulation

Log into MyMathLab, and click on “Skills Checks.” Complete the following:

• RGET Task 1 Readiness Check: Birthday Simulation Skills Check.

By receiving consistent scores of 80% or higher on subsequent attempts of this skills check, you will know that you have the competency necessary to complete Probability and Statistics I, Task 1.

Excel Help

Use the following help document to view an example of using Excel to simulate probabilities:

• Excel Example

Probability and Statistics I, Task 1

Complete the following task in TaskStream:

• Probability and Statistics I, task 1

Be sure to check your submission against the scoring rubric before submitting your task for evaluation.

Probability Distributions
The activities for this section will introduce you to selected probability distributions. What is a probability distribution? It is a way to represent outcomes and their associated probabilities. Different probability distributions have different shapes, and those shapes provide insight into the nature of the distribution. These sorts of characteristics will be discussed next.

The study of probability distributions will help you to better visualize elementary statistics and probability concepts in the context of real-world applications. During this section, you will explore discrete probability distributions. During this subject, a variety of relevant questions will be addressed:

• What is the difference between a discrete and continuous random variable?
What is mathematical expectation?
What is a probability distribution?
In which applications do discrete random variables arise?
In which applications do continuous random variables arise?
How can probability distributions be used to support claims regarding discrete or continuous random variables?

Record your thoughts and answers in your study notebook.

Discrete Probability Distributions

Read the following sections from *Elementary Statistics* in MyMathLab and complete the assigned exercises:

- 5-1 ("Review and Preview") no exercises
- 5-2 ("Random Variables") 1-29, odd numbers only
- 5-3 ("Binomial Probability Distribution") exercises 1-43, odd numbers only
- 5-4 ("Mean, Variance, and Standard Deviation for the Binomial Distribution") exercises 3-13, odd numbers only

Uniform Distribution

Read the following pages from *Elementary Statistics* in MyMathLab and complete the assigned exercises

- 6-2 ("The Standard Normal Distribution"). Start reading under the heading "Uniform Distributions" on page 251, and read only through page 252. Complete exercises 5-8.

Probability and Statistics 1, Task 2

The following activities and resources may be helpful as you complete this task.

Experimental and Observational Studies

Two of the most commonly used research designs are the experimental study and the observational study. Read definitions of each below:

- [Experimental Study Design](#)
- [Observational Study](#)

Experimental studies require a control group, as described in the Experimental Study Design website above. Observational Studies require the collection of baseline data. Baseline data is data that is collected and used for comparison against data collected about the behavior under investigation.

Following is a description of a real-world observational study, including the collection of baseline data. In this study, and in the upcoming task, two groups are compared, and one group is identified as the baseline.

- [Hand Washing Among Public Restroom Users At the Minnesota State Fair](#)
The following episodes of the documentary series about statistics, “Against All Odds,” detail these types of studies, and how these studies determine either correlation or causation.

- Against All Odds – Episode 111: The Question of Causation
- Against All Odds – Episode 112: Experimental Design

**Task Template**

Be sure you are logged into the WGU portal, then access the following link to download and save the GET task template:

- [GET task template](#)

Save a copy of this template to your desktop and print a copy for your personal use.

This document helps you organize the writing and has comments to help you to think about structuring the project you will complete for this task.

**Probability and Statistics I, Task 2 Readiness Check: Statistics Project**

Log into [MyMathLab](#) and click on “Skills Checks.” Complete the following:

- GET Task 2 Readiness Check: Statistics Project Skills Check

By receiving consistent scores of 80% or higher on subsequent attempts of this skills check, you will know that you have the competency necessary to complete Probability and Statistics I Task 2.

**Probability and Statistics I, Task 2**

Complete the following task in TaskStream:

- Probability and Statistics I, Task 2

Be sure to check your submission against the scoring rubric before submitting your task for evaluation.

**Final Steps**

Congratulations on completing the activities in this course of study! This section will guide you through the assessment process.

**Skills Checks**

Please complete the following skills checks before taking the pre-assessment. These skills checks are organized around the main content areas rather than following the order of the text. If you have significant previous coursework or are otherwise competent in probability and statistics, you may begin this course of study by taking the following skills checks.

These skills checks will help you review content as well as identify areas where you need further practice. A best practice for using these skills checks is to treat them the same way you would...
the assessment. Each skills check is timed—complete it in one sitting, and do not get help from any other source. This will give you the best indication of your preparation for the assessment.

As you complete each attempt, click on "Review Skills Checks." This will give you options to walk through problems, see additional examples, or go to the textbook section that covers a particular topic and in some cases, there are additional interactive resources.

Skills checks may (and should!) be repeated for new problems.

**GEC Skills Checks**

Log into MyMathLab, and click on "Skills Checks." Complete the following GEC Skills Checks:

- Problem Solving
- Data, Part 1
- Data, Part 2
- Counting Principle
- Counting Principle Supplemental
- Probability and Expected Value

**Assessment Information**

The activities in this course of study have prepared you to complete the GET2 performance assessment. If you have not already completed the assessments, you will do so now.

**Accessing Performance Assessments**

You should have completed the following tasks as you worked through this course of study. If you have not completed the tasks in TaskStream, do so now.

- GET2: RGET Task 1
- GET2: GET Task 2

For directions on how to receive access to performance assessments, see the "Accessing Performance Assessments" page.

**Feedback**

WGU values your input! If you have comments, concerns, or suggestions for improvement of this course, please submit your feedback using the following form:

- Course Feedback

**ADA Policy**

Western Governors University recognizes and fulfills its obligations under the Americans with Disabilities Act of 1990 (ADA), the Rehabilitation Act of 1973 and similar state laws. Western Governors University is committed to provide reasonable accommodation(s) to qualified disabled learners in University programs and activities as is required by applicable law(s). ADA Support Services serves as the principal point of contact for students seeking accommodations.
and can be contacted at ADASupport@wgu.edu. Further information on WGU’s ADA policy and process can be viewed in the student handbook at the following link:

- Policies and Procedures for Students with Disabilities