



This course supports the assessment for Data-Driven Decision Making. The course covers 6 competencies and represents 3 competency units.

Introduction

Overview

This course presents critical problem-solving methodologies, including field research and data collection methods that enhance organizational performance. Topics include quantitative analysis, statistical tools, and quality tools. You will improve your ability to use data to make informed decisions.

Getting Started

Welcome to Data-Driven Decision Making! In this course, you will study 6 topics. Mindedge will be the primary learning resource along with select supplemental readings. Within each topic, you will be asked to read text, review case studies, and complete the self-check. Competency will be demonstrated by the successful completion of an objective assessment and a performance assessment.

Watch the following video for an introduction to this course:

Note: To download this video, right-click the following link and choose "Save as...": [download video](#).

Competencies

This course provides guidance to help you demonstrate the following 6 competencies:

- **3009.1.1: The Case for Quantitative Analysis**
The graduate uses decision-making methods to develop strategies for organizational decision processes.
- **3009.1.2: Statistics as a Managerial Tool**
The graduate uses a variety of decision-analysis tools to evaluate alternatives during the decision-making processes.
- **3009.1.3: Quantitative Statistical Tools**
The graduate uses quantitative techniques and statistical tools to identify the most appropriate decision alternatives.
- **3009.1.4: Quality Metrics and Tools**
The graduate analyzes how work is accomplished and applies quality metrics and tools to increase efficiency, effectiveness, and quality.
- **3009.1.5: Real World Data-Driven Decisions**
The graduate analyzes data from business intelligence and knowledge-management systems to make appropriate decisions.
- **3009.1.6: Improving Organizational Performance**
The graduate uses appropriate data to improve organizational performance.



Course Instructor Assistance

As you prepare to demonstrate competency in this subject, remember that course instructors stand ready to help you reach your educational goals. As subject matter experts, mentors enjoy and take pride in helping students become reflective learners, problem solvers, and critical thinkers. Course instructors are excited to hear from you and eager to work with you.

Successful students report that working with a course instructor is the key to their success. Course instructors are able to share tips on approaches, tools, and skills that can help you apply the content you're studying. They also provide guidance in assessment preparation strategies and troubleshoot areas of deficiency. Even if things don't work out on your first try, course instructors act as a support system to help you prepare for another attempt. You should expect to work with course instructors for the duration of your coursework, and you are encouraged to contact them as soon as you begin. Course instructors are fully committed to your success!

Preparing for Success

The information in this section is provided to detail the resources available for you to use as you complete this course.

Learning Resources

The learning resources listed in this section are required to complete the activities in this course. For many resources, WGU has provided automatic access through the course. However, you may need to enroll manually in or independently acquire other resources. Read the full instructions provided to ensure that you have access to all of your resources in a timely manner.

Automatically Enrolled Resources

You can access the learning resources listed in this section by clicking on the links provided throughout the course. You may be prompted to log in to the WGU student portal to access the resources.

MindEdge

You will access MindEdge learning modules for the following courseware at the activity level within this course.

MindEdge (2017). *Data-Driven Decision Making*. Waltham, MA: MindEdge, Inc

Download Center - MindEdge

You may need to use some of the following programs to complete your performance assessment. Please go to the Download Center on MindEdge to download the program you need for your performance assessment.

- Excel OM for PC
- Excel OM for Macs
- MegaStat for PC (Excel 2010, 2013, 2016)
- MegaStat for MAC (Excel 2011, 2016)



- Microsoft Office

The following software is needed in order for Excel OM to function:

- Microsoft Office
- Open Office (if Microsoft Office is unavailable on your computer)

Supplemental Learning Resources

The following supplemental e-texts provide knowledge you may need to help you succeed in the assessments:

- [Bowerman, B \(2013\). *Business Statistics in Practice* \(7th ed.\). New York, NY: McGraw-Hill Education.](#)
- [Heizer, J \(2014\). *Operations Management* \(11th ed.\). Boston: Pearson Education.](#)
- [Rugg, G. \(2007\). *Using statistics: A gentle introduction*. Berkshire, England: McGraw-Hill Education.](#)

Minimum Technical Requirements

Obtain a Calculator

You will need a financial calculator or access to spreadsheet software, such as Microsoft Excel, for computational problems throughout this course. The recommended financial calculator is the Texas Instruments BA-II Plus. You may only use an approved financial calculator during the pre-assessment and assessment for this course. You are unable to use Excel during the assessments.

Topics and Pacing

This outline suggests a weekly structure to pace your completion of learning activities. It is provided as a suggestion and does not represent a mandatory schedule. Follow the instructions carefully to complete the course in the suggested timeframe.

Week 1

- Preparing for Success
- The Case for Quantitative Analysis

Week 2–Week 3

- Statistics as a Managerial Tool
- Performance Assessment Task 1

Week 4–Week 5

- Quantitative Statistical Tools
- Performance Assessment Task 2

Week 6



- Quality Management Basics

Week 7

- Real World Data-Driven Decisions
- Improving Organizational Performance

Week 8

- Data-Driven Decision Making Objective Assessment
- Data-Driven Decision Making Performance Assessment

Check Your Readiness

Review the following resource to help you get ready for working with the details in the course.

Math Diagnostic and Preparation

Access the following Math Center EdReady course to help you identify areas in math where you may need additional development and assistance. Use the resource to help prepare for your readiness for the course.

- [Data-Driven Decision Making – Grad Math Preparation](#)
- [Instruction on how to access the course](#)

Data-Driven Decision Making

There is an incomprehensible amount of data available now and it is growing every day. Managers need to know how to ask for, read, organize, interpret, and display data that is relevant to their business and decision making. This course introduces the vocabulary and models of data and statistics and helps students to use statistical tools and make decisions in business situations.

The Case for Quantitative Analysis

Business decisions must be based on relevant and reliable data. An intuition about what is happening is not enough. In this topic, you will examine principles that will help you assess the quality of data you use for decision making and applications in different settings.

This topic addresses the following competency:

- **3009.1.1: The Case for Quantitative Analysis**
The graduate uses decision-making methods to develop strategies for organizational decision processes.

This topic highlights the following objectives:

- Explain why quantitative analysis and analytics is important in decision making.
- Explain the types of decisions that can be made analytically in an organizational setting.
- Describe different decision-making models and tools.



- Identify the fundamental concepts of measurement.
- Explain how data quality affects decision making.
- Describe methods to ensure the quality of data.
- Evaluate techniques for ensuring accurate research design.
- Describe how research is used in different settings.
- Explain when to use various data management techniques.
- Apply appropriate decision-making techniques to a specific case.

Complete: Module 1: The Case for Quantitative Analysis

Module 1 of *Data Driven Decision Making* covers the following concepts:

- the definition of quality data
- how decision-making models and tools are used in different settings
- applying appropriate tools and techniques in decision making

Access the following module and complete all sections, including the readings, videos, practice assignments, and review problems:

- [Module 1 \("The Case for Quantitative Analysis"\)](#)
- Supplemental Resources:
 - [Recorded Lecture](#)
 - [Lecture Slides](#)
 - [Practice Quiz](#)
 - [Applied Examples](#)

Case Studies: Module 1: The Case for Quantitative Analysis

Case studies are an opportunity to apply the key points for module 1. Read the following case studies and answer the questions with as much detail as you can:

- [Module 1.18 \("Case Study: Aligning Sales Objectives with Email Marketing Campaigns"\)](#)
- [Module 1.19 \("Case Study: Data-Driven Decision Making in a Suburban School District"\)](#)

Self-Check: Module 1: The Case for Quantitative Analysis

If you have not already done so, complete the self-assessment questions for module 1. Review the sections for questions that you miss or contact your course instructor to be sure you have a clear understanding.

- [Module 1.21 \("Self-Assessment"\)](#)

Statistics as a Managerial Tool

Once you have data, or evidence, related to a management issue, you need to analyze the data in a systematic and valid way. Several statistical methods can be used in business situations. This topic reviews some common statistical principles and methods and allows you to practice applying those methods in management situations.

This topic addresses the following competency:



- **3009.1.2: Statistics as a Managerial Tool**

The graduate uses a variety of decision-analysis tools to evaluate alternatives during the decision making processes.

This topic highlights the following objectives:

- Describe how statistics are used in different settings.
- Describe common problems and misuse of statistics.
- Identify criteria for evaluating statistics.
- Identify the key fundamentals of probability and their real-world application.
- Identify the fundamental concepts of descriptive statistics and their real-world application.
- Select appropriate graphic methods for displaying descriptive statistics.
- Explain the fundamental concepts of inferential statistics and their real-world application.
- Evaluate a scenario in order to determine the appropriate statistic to use.
- Apply fundamental statistics to a real-world situation.
- Evaluate the appropriateness of statistics used.
- Use statistics to identify the most appropriate decision alternative.
- Translate statistical data into a graphical presentation based on a brief case study.

Complete: Module 2: Statistics as a Managerial Tool

Module 2 of *Data Driven Decision Making* covers the following concepts:

- appropriate use of statistical data
- fundamental principles of probability
- descriptive and inferential statistics
- graphic displays of data

Access the following module and complete all sections, including the readings, videos, practice assignments, and review problems:

- [Module 2 \("Statistics as a Managerial Tool"\)](#)
- Supplemental Resources:
 - [Recorded Lecture Part I](#)
 - [Recorded Lecture Part II](#)
 - [Lecture Slides](#)
 - [Practice Quiz](#)

Case Studies: Module 2: Statistics as a Managerial Tool

Apply the key points for module 2. Read the following case studies and answer the questions with as much detail as you can:

- [Module 2.34 \("Case Study: 5th Grade Weight and BMI Statistics"\)](#)
- [Module 2.35 \("Case Study: Statistics and the Effectiveness of a Mayor's Crime Program"\)](#)

Self-Check: Module 2: Statistics as a Managerial Tool



If you have not already done so, complete the self-assessment questions for module 2. Review the sections for questions that you miss or contact your course instructor to be sure you have a clear understanding.

- [Module 2.37 \("Self-Assessment"\)](#)

Performance Assessment Task 1

Go to the "Assessment" tab and start Task 1 of the Performance Assessment.

Supplemental resources for Task 1:

- Recorded Lecture: Determine an analytic technique
- Lecture slides
- [Task 1 resource](#)

Quantitative Statistical Tools

Data does not exist in a vacuum. You can use different statistical tools to discover and analyze relationships within the data set or how the data relate to the problem situation. The patterns in the data contribute to making appropriate business decisions.

This topic addresses the following competency:

- **3009.1.3: Quantitative Statistical Tools**
The graduate uses quantitative techniques and statistical tools to identify the most appropriate decision alternatives.

This topic highlights the following objectives:

- Evaluate the usefulness of different statistical techniques and their real-world application.
- Describe the various types of regression analysis and their real-world application.
- Analyze the results of a regression analysis.
- Describe common problems with multiple regression.
- Describe other statistical techniques and their real-world application.
- Explain the advantages and disadvantages of various statistical techniques.
- Choose a statistical technique based on a brief case study.

Complete: Module 3: Quantitative Decision Tools

Module 3 of *Data Driven Decision Making* covers the following concepts:

- quantitative statistical techniques
- forecasting techniques and limitations
- analyzing data using regression analysis
- applying statistical techniques to real world data

Access the following module and complete all sections, including the readings, videos, practice



assignments, and review problems:

- [Module 3 \("Quantitative Decision Tools"\)](#)
- Supplemental Resources:
 - [Recorded Lecture Part I](#)
 - [Recorded Lecture Part II](#)
 - [Lecture Slides](#)
 - [Practice Quiz](#)

Case Studies: Module 3: Quantitative Decision Tools

Apply the key points for module 3. Read the following case studies and answer the questions with as much detail as you can:

- [Module 3.26 \("Case Study: ShinyWhite and Simple Linear Regression"\)](#)
- [Module 3.27 \("Case Study: The Case to Invest in Parking Technology in a Large City"\)](#)

Self-Check: Module 3: Quantitative Decision Tools

If you have not already done so, complete the self-assessment questions for module 3. Review the sections for questions that you miss or contact your course instructor to be sure you have a clear understanding.

- [Module 3.29 \("Self-Assessment"\)](#)

Performance Assessment Task 2

Go to the "Assessment" tab and start Task 2 of the Performance Assessment.

Supplemental resource:

- [Task 2 resource](#)

Quality Management Basics

After gathering data and analyzing it using statistical tools, managers need to implement improvements in their organizations. This topic introduces performance-improvement models and change-management processes as well as statistical methods to assess the effectiveness of these changes.

This topic addresses the following competency:

- **3009.1.4: Quality Metrics and Tools**
The graduate analyzes how work is accomplished and applies quality metrics and tools to increase efficiency, effectiveness, and quality.

This topic highlights the following objectives:

- Describe principles that help guide quality management activities.
- Use the Plan-Do-Check-Act cycle to coordinate work and implement change.



- Explain the differences between quality control and quality assurance.
- Create a SIPOC diagram to help visualize work as a process.
- Explain the role that metrics and statistics play in measuring and controlling work processes.
- Apply analysis and planning approaches to quality.
- Explain how the Seven Basic Quality Tools are used to monitor and control quality processes.
- Use the Seven Basic Quality Tools to process and sort non-numerical data.
- Use Seven Basic Quality Tools in combination to create solutions to quality problems.
- Describe various quality management programs.
- Employ quality management tools based on a brief case study.

Complete: Module 4: Quality Management Basics

Module 4 of *Data Driven Decision Making* covers the following concepts:

- how businesses measure operational performance
- what data can be used to get valid measurements
- what decisions are made based on the data
- how businesses evaluate the success of performance-measurement processes

Access the following module and complete all sections, including the readings, videos, practice assignments, and review problems:

- [Module 4 \("Quality Management Basics"\)](#)
- Supplemental Resources:
 - [Recorded Lecture](#)
 - [Lecture Slides](#)
 - [Practice Quiz](#)
 - [Applied Examples](#)

Case Studies: Module 4: Quality Management Basics

Apply the key points for module 4. Read the following case studies and answer the questions with as much detail as you can:

- [Module 4.20 \("Case Study: Solving Quality Problems in the Manufacture of Integrated Circuit Boards"\)](#)
- [Module 4.21 \("Case Study: Quality Process Improvement in an Early Intervention Setting"\)](#)

Self-Check: Module 4: Quality Management Basics

If you have not already done so, complete the self-assessment questions for module 4. Review the sections for questions that you miss or contact your course instructor to be sure you have a clear understanding.

- [Module 4.23 \("Self-Assessment"\)](#)



Real World Data-Driven Decisions

Gathering and analyzing data may be a fun way to pass time, but the real value comes in using that information to make decisions and improve businesses. In this topic you will examine real-world data and business situations from several different business types. You will apply the statistical methods you've learned to uncover effects of changes in those businesses and recommend further actions.

This topic addresses the following competency:

- **3009.1.5: Real World Data-Driven Decisions**

The graduate analyzes data from business intelligence and knowledge-management systems to make appropriate decisions.

This topic highlights the following objectives:

- Describe the management implications of the use of business intelligence and knowledge management systems.
- Define Big Data and describe its current uses for analysis and future potential.
- Describe common analytics for business and quality improvement.
- Analyze the data set from a brief case study to recommend manufacturing business decisions based on data analytics.
- Describe common analytics used in healthcare.
- Analyze the data set from a brief case study to recommend healthcare decisions based on data analytics.
- Describe common analytics used in education.
- Analyze the data set from a brief case study to recommend educational decisions based on data analytics.
- Describe common analytics used in government.
- Analyze the data set from a brief case study to recommend governmental decisions based in data analytics.

Complete: Module 5: Real World Data-Driven Decisions

Module 5 of *Data Driven Decision Making* covers the following concepts:

- how businesses use data to make decisions
- how businesses select appropriate models to use to analyze data
- using the analysis models learned in previous modules

Access the following module and complete all sections, including the readings, videos, practice assignments, and review problems:

- [Module 5 \("Real World Data-Driven Decisions"\)](#)
- Supplemental Resources:
 - [Recorded Lecture](#)
 - [Lecture Slides](#)



- [Practice Quiz](#)

Case Studies: Module 5: Real World Data-Driven Decisions

Apply the key points for module 5. Read the following case studies and answer the questions with as much detail as you can. Review the module for any processes you're not confident in using.

- [Module 5.06 \("Case Study: Tomato Farming: Analyzing Operating Costs and Decisions about New Practices"\)](#)
- [Module 5.08 \("Case Study: The Case to Require Bacterial Meningitis Vaccinations for College Students"\)](#)
- [Module 5.10 \("Case Study: Education Mini Case Module 5: Reliability and Measurement Error in 5th Grade MCAS Scores"\)](#)
- [Module 5.12 \("Case Study: Costs, Benefits and Decision-Making in a City's Efforts to Improve Environmental Sustainability"\)](#)

Self-Check: Module 5: Real World Data-Driven Decisions

If you have not already done so, complete the self-assessment questions for module 5. Review the sections for questions that you miss or contact your course instructor to be sure you have a clear understanding.

- [Module 5.14 \("Self-Assessment"\)](#)

Improving Organizational Performance

Successful businesses measure several aspects of performance. Not all measurements relate to business finances, but they usually affect the financial bottom line. This topic introduces some of the ways that businesses use data to measure and hopefully improve performance.

This topic addresses the following competency:

- **3009.1.6: Improving Organizational Performance**
The graduate uses appropriate data to improve organizational performance.

This topic highlights the following objectives:

- Explain how performance measures are used in different settings.
- Differentiate among various organizational performance measurements.
- Describe the advantages and disadvantages of key performance indicators (KPIs).
- Describe the advantages and disadvantages of the balanced scorecard.
- Explain the relationship between performance assessment and organizational tactics and strategy.
- Assess the validity of performance measures for an organization based on a brief case study.

Complete: Module 6: Improving Organizational Performance

Module 6 of *Data Driven Decision Making* covers the following concepts:



- how businesses measure performance
- what data can be used to get valid measurements
- what decisions are made based on the data

Access the following module and complete all sections, including the readings, videos, practice assignments, and review problems:

- [Module 6 \("Improving Organizational Performance"\)](#)
- Supplemental Resources:
 - [Recorded Lecture](#)
 - [Lecture Slides](#)
 - [Practice Quiz](#)

Case Studies: Module 6: Improving Organizational Performance

Apply the key points for module 6. Read the following case studies and answer the questions with as much detail as you can:

- [Module 6.16 \("Case Study: Visualizing Transportation Metrics and Performance Trends to Solve Problems"\)](#)
- [Module 6.17 \("Case Study: Healthcare and the Pros and Cons of Balanced Scorecard Usage"\)](#)

Self-Check: Module 6: Improving Organizational Performance

If you have not already done so, complete the self-assessment questions for module 6. Review the sections for questions that you miss or contact your course instructor to be sure you have a clear understanding.

- [Module 6.19 \("Self-Assessment"\)](#)

Prepare for the Course Assessments

This course includes both an objective assessment and a performance assessment. Review and study the concepts in this course to prepare for the assessments.

Prepare for the Objective Assessment

Make sure you complete the following activities before you schedule your objective assessment:

- Review module 1 through module 6.
- Review module 7 ("[Case Study](#)")
- Complete [Self-Assessment](#).
- Complete and pass the pre-assessment (under the Assessment tab on the top).

Schedule your objective assessment. For details about how to access this objective assessment, see the "Assessment" tab in this course.

Complete the following assessment:



- Data-Driven Decision Making

Prepare for the Performance Assessment: Data-Driven Decision Making

Your performance assessment task involves analyzing a problem of productivity in a work situation. To get the most value out of your experience, choose a work environment that is related to your professional emphasis or a collection of data in a quantitative study from an online resources with which you are familiar. You will complete the following activities for this task:

- select a performance measure to study
- create a research protocol
- collect data
- analyze data using appropriate tools
- write a report

Read the following papers and review your notes from the course:

- "[Strength in Numbers: How Does Data-Driven Decision Making Affect Firm Performance?](#)"
Note: click "Download this paper" at the bottom right of the screen.
- "[Data Analytics \(DA\)](#)"

Based on the task you choose for your performance assessment, refer to the appropriate readings below for additional resources you may need to complete the performance assessment.

Operations Management

- [Chapter 4: Forecasting](#)
- [Supplement 6: Statistical Process Control](#)
- [Chapter 7: Process Strategy](#)
- [Supplement 7: Capacity and Constraint Management](#)
- [Chapter 16: JIT, TPS, and Lean Operations](#)
- [Chapter 17: Maintenance and Reliability](#)
- [Module A: Decision-Making Tools](#)
- [Module B: Linear Programming](#)
- [Module F: Simulation](#)

Business Statistics in Practice

- [Chapter 1: An Introduction to Business Statistics](#)
- [Chapter 2: Descriptive Statistics: Tabular and Graphical Methods](#)
- [Chapter 3: Descriptive Statistics: Numerical Methods](#)
- [Chapter 4: Probability](#)
- [Chapter 9: Hypothesis Testing](#)
- [Chapter 10: Comparing Two Means and Two Proportions](#)



- [Chapter 13: Chi-Square Tests](#)
- [Chapter 14: Simple Linear Regression Analysis](#)
- [Chapter 15: Multiple Regression and Model Building](#)
- [Chapter 16: Time Series Forecasting and Index Numbers](#)
- [Chapter 17: Process Improvement using Control Charts](#)
- [Chapter 19: Decision Theory](#)

Please go to the Download Center on MindEdge to choose the appropriate software to use to complete your performance assessment. For more information about the Download Center, go to the Learning Resources under Preparing for Success.

Complete: Task 1 and Task 2

Complete the following tasks in Taskstream (see the link to Taskstream in the Assessment Tab):

- Data-Driven Decision Making: Task 1
- Data-Driven Decision Making: Task 2

For details about this performance assessment, see the "Assessment" tab in this course.

Final Steps

Congratulations on completing the activities in this course! This course has prepared you to complete the assessment associated with Data-Driven Decision Making. If you have not already been directed to complete it, schedule and complete the assessment now.