

CONTINUING EDUCATION

COURSE OUTLINE – Data Analytics Certificate

INSTRUCTOR: Self-paced

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PREREQUISITE(S): None

REQUIRED TEXT/RESOURCE MATERIALS:

Course materials are included.

CALENDAR DESCRIPTION:

This certificate provides an overview of topics in statistics and their applications in a variety of fields. This certificate will present the basics of quantitative analysis and its increasing use in today's professional landscape. You will be exposed to quantitative decision-making tools and techniques, which tie into real-world case studies. Each course in this certificate utilizes games, videos, interactive exercises, quizzes, real world case studies, and other engaging content to ensure rapid mastery of the content and direct application. Course videos and lessons focus on use of both Microsoft Excel and OpenOffice.

CONTACT HOURS: 30 hours

CEUs: 3

DELIVERY MODE: Online self-paced

TRANSFERABILITY: N/A

GRADING CRITERIA:

Upon successful completion of the course, you will receive a Certificate of Completion.

EVALUATIONS: Learners must achieve a test score of at least 70% in each course to meet the minimum successful completion requirement and qualify to receive IACET CEUs.

STUDENT RESPONSIBILITIES: Completion of any practice lessons, quizzes, assignments, or tests.

COURSE SCHEDULE/TENTATIVE TIMELINE:

Dates vary (refer to website for current availability).

PROGRAM CONTENT:

Statistical Process Control – 5 Hours

Statistical Process Control is all about boosting quality. Quality management can not only deliver value to customers and stakeholders, it can also enable data-driven decision making that helps organizations gain a competitive advantage in the marketplace. This intermediate-level course will introduce the basics of quality management, explaining the difference between quality control and quality assurance, providing methods for application of analysis, showing different applications of the Seven Basic Quality Tools. It all culminates in a brief case study, which illustrates the concepts covered.

Learning Outcomes

- 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 the Seven Basic Quality Tools in combination to create powerful plans and solutions to quality problems
- Describe various quality management programs
- Employ quality management tools based on a brief case study

Data Analysis in the Real World – 5 Hours

How are data-driven decisions put into practice in the real world? How do these decisions differ when applied to different sectors, such as health care, education and government? This intermediate-level course will provide answers to these questions as well as recommendations for decision-making based on data analytics for each sector. The course will begin with an introduction of Big Data, then continue into a deeper dive on its implications within each sector. Industry case studies make the concepts applicable in the real-world.

Learning Outcomes

- Explain 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 and its implications
- Explain common analytics for business and quality improvement
- Recommend manufacturing business decisions based on data analytics
- Explain common analytics used in health care
- Recommend health care decisions based on data analytics
- Explain common analytics used in education
- Recommend educational decisions based in data analytics
- Explain common analytics used in government
- Recommend governmental decisions based on data analytics

Data Analysis for Improving Organizational Performance – 5 Hours

When using data analysis to improve organizational performance, it's vital to employ the tools that bring the data to life and keep people engaged in the process. Organizations in both the public and private sectors often use tools and frameworks to deliver the data, and the information the data might suggest, to its staff. This intermediate-level course will explain some of these measures and tools, describe some specific measurements, and explain the relationship between assessment and strategy. Summarizing the data with the correct tool can be the gating factor to reaching staff and effecting changes that spur performance improvement.

Learning Outcomes

- Explain how performance measures are used in different settings
- Differentiate among various organizational performance measurements
- Describe the advantages and disadvantages of KPIs
- Describe the advantages and disadvantages of the Balanced Scorecard
- Describe the advantages and disadvantages of a Net Promoter Score
- 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

Introduction to Data Analysis – 5 Hours

Whatever your profession. Whatever your field. As a professional, and certainly as a leader, you will be asked to make a decision based on data. This course will introduce the different types of decisions made in an organizational setting, why quantitative analytics is important, and how data quality can affect decision making. Since quantitative analytics is used in various settings, this intermediate-level course also offers insight into how research is used

in different sectors. From a management perspective, the course highlights appropriate quantitative methods and ways to ensure quality and accuracy through research design.

Learning Outcomes

- 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 including levels of measurement, reliability and validity, errors, measurement and information bias
- Explain how quality data affects decision making (GIGO principle)
- Describe methods of ensuring the quality of data
- Evaluate techniques for ensuring accurate research design
- Describe how research is used in different settings: business, education, health care, the military, government, nonprofits
- Explain data management techniques including transforming data, recoding data, and handling missing data
- Apply appropriate decision making techniques to a specific case

Tools of Data Analysis – 5 Hours

There are a number of statistical tools and techniques that are commonly used by organizations to inform decision-making. These tools span numerous business functions and support many different objectives. This intermediate-level course describes, evaluates, and analyzes different statistical techniques and their real-world limitations and benefits. The course features crossover analysis, break-even analysis, cluster analysis, decision tree analysis as well as an introduction to regression.

Learning Outcomes

- Evaluate the usefulness of different statistical techniques and their real-world application
- Describe the various forecasting techniques and the benefits and limitations
- 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

Statistics as Managerial Tool – 5 Hours

Managing today can require good instincts. However, instinct is not enough to manage the huge amounts of available data and the complex variables of the business world. Statistics can help managers and leaders make sense of these complexities, back-up their assertions, and feel confident about when to take the risks and when to pump the breaks. This intermediate-level course examines statistics as a managerial tool. It also looks at common graphical representations of data and how these can be effective tools to explain situations and support persuasive arguments for a course of action.

Learning Outcomes

- Describe how statistics are used in different settings
- Describe common problems with, and misuse of, statistics
- Identify criteria for evaluating statistics
- Explain the key fundamentals of probability and their real-world application
- Identify the fundamental concepts of descriptive statistics (populations and samples, measures of central tendency, measures of variability, measures of distribution) 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