

Data Analytics

Course Credit	1.0
Grade Levels	10-12
Prerequisites	

Data Analytics is a specialized course designed to introduce statistics and the application of statistics to business decision-making. It covers the design and development of financial applications using the tools available in statistical analysis software to analyze data and convert into useful information. It focuses on utilizing software applications and appropriate methods to collect data and provide clients with useful information to reach valid conclusions resulting in sound business decisions.

Foundational standards, shown in the table below, are an important part of every course. Through these standards, students learn and apply safety concepts, explore career opportunities and requirements, practice the skills needed to succeed in the workplace, develop leadership qualities and take advantage of the opportunities afforded by Career and Technical Student Organizations (CTSOs), and learn and practice essential digital literacy skills. The foundational standards are to be incorporated throughout the course.

Each foundational standard completes the stem “*Students will...*”

Foundational Standards

1. Incorporate safety procedures in handling, operating, and maintaining tools and machinery; handling materials; utilizing personal protective equipment; maintaining a safe work area; and handling hazardous materials and forces.
2. Demonstrate effective workplace and employability skills, including communication, awareness of diversity, positive work ethic, problem-solving, time management, and teamwork.
3. Explore the range of careers available in the field and investigate their educational requirements, and demonstrate job-seeking skills including resume-writing and interviewing.
4. Advocate and practice safe, legal, responsible, and ethical use of information and technology tools specific to the industry pathway.

5. Participate in a Career and Technical Student Organization (CTSO) to increase knowledge and skills and to enhance leadership and teamwork.
6. Discuss and demonstrate ways to value diversity.

DATA ANALYTICS CONTENT STANDARDS

Each content standard completes the stem “*Students will...*”

1. Summarize and evaluate how statistics are used in business areas.
Examples: accounting, economics, finance, management, marketing
 - a. List the advantages of using statistics to make financial business decisions.
 - b. Describe the use of technology in the management of finance.
Examples: spreadsheet software, instant financial statement generator
 - c. Explain the variation of data using range, sample variance, sample standard deviation, coefficient of the variation, and Z score.
 - d. Demonstrate and explain the measure of shape of the data set using skewness, symmetry, and kurtosis.
Example: Use charts and graphs to explain the importance of visualization to communicate with clients.
2. Use functions and formulas available in statistical analysis software to process and analyze data.
 - a. Discuss strategies for selecting appropriate technology tools to solve problems.
3. Use a problem-solving model to analyze data, formulate a plan or strategy, determine a solution, justify the solution, and evaluate the problem-solving process.
4. Explain the meaning, uses, and importance of data visualization.
5. Explain how photographs, words, numbers, and sounds can be interpreted as data, giving examples from real-world situations.
Examples: infographics, symbols, memes, videos, logos

Analyzing Data

Analytics

6. Explain the four main types of analytics and how these work together to provide information about all facets of a company's operations.
Examples: consumer behaviors, marketing strategies, sales forecasts
7. Describe how financial and statistical data are used in professional and personal lives.
Examples: insurance rates, interest rates, data trackers, marketing analytics, Census, National Highway Traffic Safety Administration, National Center for Education Statistics
8. Analyze data presented in graphic form, including histograms, scatter plots, heat maps, and box plots, to identify patterns in data and make predictions.
Examples: trends, fluctuations, data concentration
9. Interpret data presented in various data visualization models.
Examples: dashboards, flowing data
 - a. Describe how models highlight various aspects of data.
10. Use statistical analysis software to analyze transactional data.
 - a. Develop a plan for using transactional data to develop customer intelligence.

Interpreting Data

Statistics

11. Use statistics appropriate to the shape of the data distribution to compare the center (median, mean) of two or more different data sets used in business.
12. Identify and use patterns in data values or range of data values to improve a business process.
Examples: Track customer orders to refine menu items in a restaurant, increase server capacity and delivery services in response to health-related emergencies, attract customers with mid-week sales to control crowds on weekends.
13. Explain how categorical data may be used in decision-making in a service business to improve efficiency and profit.
Examples: Identify the groups for the variable, popular meal served, frequency of each meal served, time of day meal is served.

14. Interpret relative frequencies in the context of the data.

Examples: joint probability, marginal distribution, conditional relative frequencies

15. Identify data on two quantitative variables on a scatter plot, and describe how the variables are related.

16. Describe how statistics are used to analyze and understand various business and economic problems and to formulate policies for economic growth.

Examples: labor market reports, trade balance, Gross Domestic Product, consumer spending

17. Use diagrams, tables, organized lists, and area models to compute sales probability during peak season for a retail business.

Examples: Determine customer likes and dislikes for popular items based on previous years' sales.

18. Analyze concepts of probability associated with financial planning.

19. Describe how technology impacts all aspects of finance, from customer experience and operational efficiency to big data and analytics.

Examples: statistical analysis software

20. Apply problem-solving models and statistics to develop a business plan.

Examples: formulate a business plan or strategy, determine a solution

21. Gather and share information on the ethical and responsible use of statistical data in business.

22. Research career opportunities that require strong analytical skills.

Examples: data analyst, derivatives analyst, climatologist, nurse, geneticist, political scientist, rocket engineer, criminologist

Probabilities

Financial Practices

Ethics

Career Opportunities