COURSE TITLE: Data Analytics

Course Description:
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.

Potential Certifications/Credentials:
Adobe Certified Associate (ACA) – Photoshop / Dreamweaver / Premier Pro / InDesign / Illustrator, ASK Institute – Concepts of Entrepreneurship and Management / Fundamental Business Concepts, Certiport- Entrepreneurship and Small Business (must hold concentrator status), IC3 Global Standard 6 (or higher), Microsoft Office Expert 2019/365 - Access / Excel / Word, Microsoft Office Specialist 2019/365 (MOS) (Two of the following areas REQUIRED: Excel Associate / Outlook Associate / PowerPoint Associate / Word Associate)
## Course Scope and Sequence

<table>
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<tr>
<th>Unit #</th>
<th>Unit Title</th>
<th>Estimated Hours</th>
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<tr>
<td>1</td>
<td>Foundational Standards</td>
<td>Ongoing</td>
</tr>
<tr>
<td>2</td>
<td>Analyzing Data</td>
<td>18 hrs.</td>
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<tr>
<td>3</td>
<td>Analytics</td>
<td>3 hrs.</td>
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<tr>
<td>4</td>
<td>Interpreting Data</td>
<td>3 hrs.</td>
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<tr>
<td>5</td>
<td>Traffic Safety Administration, National Center for Education Statistics</td>
<td>4.5 hrs.</td>
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<tr>
<td>6</td>
<td>Statistics</td>
<td>9 hrs.</td>
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<tr>
<td>7</td>
<td>Probabilities</td>
<td>3 hrs.</td>
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<tr>
<td>8</td>
<td>Financial Practices</td>
<td>3 hrs.</td>
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<td>9</td>
<td>Ethics</td>
<td>3 hrs.</td>
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<tr>
<td>10</td>
<td>Career Opportunities</td>
<td>3 hrs.</td>
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</tbody>
</table>
Unit Plans of Instruction

Foundational Standards

Supporting—will be taught throughout the course as needed for the unit.

F1. 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.

F2. Demonstrate effective workplace and employability skills, including communication, awareness of diversity, positive work ethic, problem-solving, time management, and teamwork.

F3. Explore the range of careers available in the field and investigate their educational requirements, and demonstrate job-seeking skills including resume-writing and interviewing.

F4. Advocate and practice safe, legal, responsible, and ethical use of information and technology tools specific to the industry pathway.

F5. Participate in a Career and Technical Student Organization (CTSO) to increase knowledge and skills and to enhance leadership and teamwork.

F6. Discuss and demonstrate ways to value diversity.
Unit 2 Title: Analyzing Data

Content Standards
1. Summarize and evaluate how statistics are used in business areas.
   1a. List the advantages of using statistics to make financial business decisions.
   1b. Describe the use of technology in the management of finance.
   1c. Explain the variation of data using range, sample variance, sample standard deviation, coefficient of the variation, and Z score.
   1d. Demonstrate and explain the measure of shape of the data set using skewness, symmetry, and kurtosis.

2. Use functions and formulas available in statistical analysis software to process and analyze data.
   2a. 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.

Unpacked Learning Objectives

Students know:
- How statistics are used in business areas.
- The advantages of using statistics to make financial business decisions.
- The use of technology in the management of finance.
- The variation of data using range, sample variance, sample standard deviation, coefficient of the variation, and Z score.
- The measure of shape of the data set using skewness, symmetry, and kurtosis.
- How to use charts and graphs to explain the importance of visualization to communicate with clients.
- Functions and formulas available in statistical analysis software to process and analyze data.
- Strategies for selecting appropriate technology tools to solve problems.
- How to 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.
- The meaning, uses, and importance of data visualization.
- Photographs, words, numbers, and sounds can be interpreted as data.
Students are able to:

- Describe how statistics are used in business areas.
- Discuss how statistics are used in business areas.
- List the advantages of using statistics to make financial business decisions.
- State the advantages of using statistics to make financial business decisions.
- Describe the use of technology in the management of finance.
- Summarize the use of technology in the management of finance.
- Identify the variation of data using range, sample variance, sample standard deviation, coefficient of the variation, and Z score.
- Interpret the measure of shape of the data set using skewness, symmetry, and kurtosis.
- Create the measure of shape of the data set using skewness, symmetry, and kurtosis.
- Summarize the measure of shape of the data set using skewness, symmetry, and kurtosis.
- Diagram the measure of shape of the data set using skewness, symmetry, and kurtosis.
- Use charts and graphs to explain the importance of visualization to communicate with clients.
- Apply functions and formulas available in statistical analysis software to process and analyze data.
- Use functions and formulas available in statistical analysis software to process and analyze data.
- Practice functions and formulas available in statistical analysis software to process and analyze data.
- Apply strategies for selecting appropriate technology tools to solve problems.
- Describe the strategies for selecting appropriate technology tools to solve problems.
- Summarize the strategies for selecting appropriate technology tools to solve problems.
- List the strategies for selecting appropriate technology tools to solve problems.
- Summarize the procedures of using a problem-solving model to analyze data, formulate a plan or strategy, determine a solution, justify the solution, and evaluate the problem-solving process.
- Describe the procedures of using a problem-solving model to analyze data, formulate a plan or strategy, determine a solution, justify the solution, and evaluate the problem-solving process.
- Describe the meaning, uses, and importance of data visualization.
- Summarize the meaning, uses, and importance of data visualization.
- Interpret data as photographs, words, numbers, and sounds.
- Give examples of data in real-world situations.

Students understand that:

- An effective business uses statistics to make important business decisions.
- A successful business uses statistics to make financial business decisions.
- A successful business uses various technologies in the management of finance.
- A successful business analyzes data in several ways.
- A successful business uses the measure of shapes as an analyzing visual display to communicate information to their clients.
- Data analytics use charts and graphs visualization to communicate with clients.
- A successful business uses statistical analysis software to process and analyze data.
- A successful business uses appropriate technology tools to solve problems and to analyze data.
- A successful business uses a process to effectively analyze data.
- Data visualization is important and being used for the purpose of communicating analyzed data to the client.
- Data can be interpreted as various forms; photographs, words, numbers, and sounds.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>What is the process of analyzing data?</th>
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</thead>
<tbody>
<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Identifying the system to analyze data.</td>
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</table>
### Map of Student Learning by Learning Objective

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Students explain in their own words how statistics are used in business areas.</td>
<td>Describe how statistics are used in business areas. One Pager Research Report Reflection Report</td>
<td>Scavenger Hunt Investigative Inquiry Reflection on Thought Processes</td>
<td>MATH: Microsoft Excel ELA: Writing: Students will write a five-paragraph essay using the AEC format for writing in order to explain three ways that statistics are used in business areas.</td>
<td>Word Google Docs PowerPoint Canva</td>
</tr>
<tr>
<td>Students explain in their own words the advantages of using statistics to make financial business decisions.</td>
<td>Identify the advantages of using statistics to make financial business decisions.</td>
<td>One Pager Report Graphic Organizer</td>
<td>ELA: Writing/Research: Students will use Canva to create a poster that details the advantages of using statistics to make financial business decisions.</td>
<td>Word PowerPoint Canva Google Docs</td>
</tr>
<tr>
<td>Students describe the use of technology in management of finance.</td>
<td>Explain the use of technology in management of finance.</td>
<td>One Pager Report Graphic Organizer</td>
<td>ELA: Research/Writing: Students will research emerging technological trends in the management of finance and discuss three trends and how they will be used to enhance</td>
<td>Word PowerPoint Canva Google Docs</td>
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</tbody>
</table>

**Note:**
- **Equipment List by CTE Cluster**
- **Link to Helpful Tech Tools**
<table>
<thead>
<tr>
<th>Students explain the variation of data using range, sample variance, sample standard deviation, coefficient of the variation, and Z score.</th>
<th>Describe the variation of data using the concepts of statistics</th>
<th>Narrative description of data variation using the concepts of statistics. (Report) Graphs Charts One Pager</th>
<th>ELA: Writing: Students will write a children’s book demonstrating the math formula in simple terms with images. In writing their children’s book, students need to choose a main character who encounters a problem and meets other characters who show the main character possible ways that their problem can be solved using these data variations.</th>
<th>Word PowerPoint Canva Google Docs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students explain in their own words the measure of shape of the data set using skewness, symmetry, and kurtosis.</td>
<td>Describe the measure of shape of the data set using skewness, symmetry &amp; kurtosis.</td>
<td>One Pager with Graphs of Data set.</td>
<td>ELA: Writing, Presenting: Students will write a script and upload examples of the measure of shape of the data set using skewness, symmetry, and kurtosis. Students will then use VoiceThread to explain each of the above terms as it is represented visually on the screen.</td>
<td>Word PowerPoint Canva Google Docs</td>
</tr>
<tr>
<td>Students apply charts and graphs to explain the importance of visualization to communicate with clients.</td>
<td>Utilize charts &amp; graphs to explain the data to clients using Excel spreadsheets, Word documents, &amp;/or Powerpoint presentations.</td>
<td>Excel Spreadsheets PowerPoint Presentations Word Documents</td>
<td>ELA: Students will use Canva to create an Infographic that visually displays data in a concise and appealing format.</td>
<td>Word PowerPoint Canva Google Docs Excel</td>
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<tr>
<td>Students apply functions and formulas available in statistical analysis software to process and analyze data.</td>
<td>Create Excel worksheets and/or workbooks to apply functions &amp; formulas available to process &amp; analyze data.</td>
<td>Excel Spreadsheets PowerPoint Presentations Word Documents</td>
<td>Word PowerPoint Canva Google Docs Excel</td>
<td></td>
</tr>
<tr>
<td>Students explain in their own words strategies for selecting appropriate technology tools to solve problems.</td>
<td>Describe strategies used for selecting appropriate technology tools to solve problems.</td>
<td>One Pager Report Graphic Organizer</td>
<td>ELA: Students will use VoiceThread to create and share short podcasts on their assigned technology tool and how it is chosen based on the needs of the problem. Following this creation, students will listen to the podcasts of their classmates and make comments using either the voice or text function of VoiceThread.</td>
<td>Word PowerPoint Canva Google Docs</td>
</tr>
<tr>
<td>Students create a problem-solving model to analyze data, formulate a plan or strategy, determine a solution, justify the solution, and evaluate the problem-solving process.</td>
<td>Build a smartart in Word or PowerPoint illustrating the model to analyze data.</td>
<td>One Pager Report Graphic Organizer</td>
<td>ELA: Writing: Students will choose their favorite dystopian character (think of the likes of Katness Everdeen) and write an adventure story where their main character must follow the problem solving model to fight the evil head of an organization who plans to take control of the world. The character must work to</td>
<td>Word PowerPoint Canva Google Docs</td>
</tr>
<tr>
<td>Students explain the meaning, uses, and importance of data visualization.</td>
<td>Describe the meaning, uses, &amp; importance of data visualization.</td>
<td>One Pager Report Graphic Organizer</td>
<td>ELA: Writing, Speaking: Students will write and present a TED-Style Talk explaining the meaning, uses and importance of data visualization. The presentation will include demonstrative images of data visualization as well as documented research from outside sources.</td>
<td>Word PowerPoint Canva Google Docs</td>
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<tr>
<td>Students explain how photographs, words, numbers, and sounds can be interpreted as data, giving examples from real-world situations.</td>
<td>Describe how photographs, words, numbers &amp; sounds can be interpreted as data, giving examples from real-world situations.</td>
<td>One Pager Report Graphic Organizer</td>
<td>ELA: Students will use Sutori to gather visual and audio sources on a provided topic (i.e. different brands and their advertisements, different news/ current events, or social issues). On Sutori, students will gather and include multi-genre documents such as photographs, print advertisements, podcasts, news stories, video clips, infographics, charts, tables,</td>
<td>Word PowerPoint Canva Google Docs</td>
</tr>
</tbody>
</table>
graphs, etc. Students will provide a brief explanation of each artifact on the Sutori platform and then write a conclusion statement of their findings in terms of how these resources can be used as data.

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**Key Vocabulary**

data, data analytics, statistics, business areas, accounting, economics, finance, management, marketing, statistics, financial business decisions, technology, finance, use of technology in the management of finance, spreadsheet software, instant financial statement generator, variation of data, range, variation of data using range, sample standard deviation, coefficient, coefficient of the variation, Z score, measure of shape, data set skewness, symmetry, kurtosis, charts, graphs, visualization to communication, charts, graphs, analyzing data, functions in statistical analysis, software, formals in statistical analysis software, statistical analysis software, data, process data, technology, appropriate technology, appropriate technology tools, analyze data, problem-solving model, formulate a plan, formulate a strategy, justify the solution, evaluate the problem-solving process, data, data visualization, photographs, words, numbers, sound, data, interpreted as data, real-world situations, infographics, symbols, memes, videos, logos

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**Work-Based Learning, Simulated Work Experiences, and Experiential Learning:**

Portfolio of One Pagers, Presentations, Worksheets, Graphs, Charts, & Reports from the Unit work.

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**CTSO Connection:**


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**Certification/Credential Connection:**

Microsoft PowerPoint, Word & Excel & Data Analysis Certifications
Unit 3 Title: Analytics

Content Standards
6. Explain the four main types of analytics and how these work together to provide information about all facets of a company’s operations.

Unpacked Learning Objectives

Students know:
● The four main types of analytics and how these work together to provide information about all facets of a company’s operations.

Students are able to:
● Summarize the four main types of analytics and how these work together to provide information about all facets of a company’s operations.
● Describe the four main types of analytics and how these work together to provide information about all facets of a company’s operations.
● List the four main types of analytics and how these work together to provide information about all facets of a company’s operations.

Students understand that:
● The systematic computational analysis of data and how these work together to result in the facets of a company’s operations.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>What are the four main types of analytics?</th>
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<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Describe the main types of analytics.</td>
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## Map of Student Learning by Learning Objective

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<tbody>
<tr>
<td>Students discuss the four main types of analytics and how these work together to provide information about all facets of a company’s operations.</td>
<td>Identify the four main types of analytics &amp; explain how they work together to provide information on all facets of a company’s operations.</td>
<td>Graphic Organizer PowerPoint Presentation Word Report</td>
<td>ELA: Planning, Writing, Presenting: Students will use Bubbl.us to chart the four main types of analytics, their characteristics and examples of them. Students will then use Bubbl.us tools to create and explain connections between the types of analytics. Attention must be paid to the use of color and design.</td>
<td>Equipment List by CTE Cluster Link to Helpful Tech Tools</td>
</tr>
</tbody>
</table>

- **Equipment, Technology & Materials**
  - Microsoft Word
  - PowerPoint
  - Computer
  - Laptop
Key Vocabulary
analytics, four main types of analytics, facets, facets of a company’s operations, consumer behaviors, marketing strategies, sales forecasts

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:
https://analytics.google.com/analytics/academy/

CTSO Connection:

Certification/Credential Connection:
Microsoft PowerPoint, Word & Excel & Data Analysis Certifications
Unit 4 Title: Interpreting Data

Content Standards
7. Describe how financial and statistical data are used in professional and personal lives.

Unpacked Learning Objectives

Students know:
● How financial and statistical data are used in professional and personal lives.

Students are able to:
● Describe how financial and statistical data are used in professional and personal lives.
● Summarize how financial and statistical data are used in professional and personal lives.

Students understand that:
● The interpreting of financial and statistical data is used in their professional and personal lives.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>How are financial &amp; statistical data used in professional &amp; personal lives?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Excel Worksheets using financial &amp; statistical data for professional &amp; personal tasks.</td>
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</tbody>
</table>
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<tbody>
<tr>
<td>Students explain in their own words how financial and statistical data are used in professional and personal lives.</td>
<td>Develop a One-Pager: explain in their own words how financial and statistical data are used in professional and personal lives.</td>
<td>One-Pager Word Document Verbal or Written Reflection Graphic Organizer</td>
<td>ELA: Writing: Students will write a personal perspective explaining how financial and statistical data have been used in their lives by companies seeking to market and sell their product to teens. From a different (contrasting) point of view, students will write about how this data is used to target teens from the business’s perspective.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
</tbody>
</table>

**Equipment List by CTE Cluster**

**Link to Helpful Tech Tools**
Key Vocabulary

financial, financial data, statistical, statistical data, professional lives, personal lives, insurance rates, interest rates, data trackers, marketing analytics, Census, National Highway

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

https://analytics.google.com/analytics/academy/

CTSO Connection:


Certification/Credential Connection:

Microsoft PowerPoint, Word & Excel & Data Analysis Certifications
Unit 5 Title: Traffic Safety Administration, National Center for Education Statistics

Content Standards
8. Analyze data presented in graphic form, including histograms, scatter plots, heat maps, and box plots, to identify patterns in data and make predictions.

9. Interpret data presented in various data visualization models.
   9a. Describe how models highlight various aspects of data.

10. Use statistical analysis software to analyze transactional data.
   10a. Develop a plan for using transactional data to develop customer intelligence.

Unpacked Learning Objectives

Students know:
- How to analyze data presented in graphic form, including histograms, scatter plots, heat maps, and box plots, to identify patterns in data and make predictions.
- How to interpret data presented in various data visualization models.
- How models highlight various aspects of data.
- How to use statistical analysis software to analyze transactional data.
- A plan for using transactional data to develop customer intelligence.

Students are able to:
- Analyze data presented in graphic form.
- Examine data presented in graphic form.
- Analyze data presented in various data visualization models.
- Interpret data presented in various data visualization models.
- Summarize data presented in various data visualization models.
- Describe how models highlight various aspects of data.
- Use statistical analysis software to analyze transactional data.
- Design a plan for using transactional data to develop customer intelligence.
- Create a plan for using transactional data to develop customer intelligence.
- Compose a plan for using transactional data to develop customer intelligence.
Students understand that:

- The various ways in which data can be presented.
- Data can be presented in various data visualization models.
- There are various data visualization models used to highlight data.
- Statistical analysis software is used to analyze data.
- An established plan must be used when using transnational data to develop customer intelligence.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>How to use, analyze &amp; interpret statistical &amp; transactional data in graphic forms &amp; visualization models?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Graphic Forms &amp; Visualization Models illustrating various data using Excel, Word, Powerpoint or any other statistical software.</td>
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</table>
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</thead>
<tbody>
<tr>
<td>Students interpret data presented in graphic form, including histograms, scatter plots, heat maps, and box plots, to identify patterns in data and make predictions.</td>
<td>Identify patterns in data &amp; predictions using various graphic forms.</td>
<td>Build graphic forms using charts &amp; graphs via MOS Suite with narrative interpretation of each one.</td>
<td>ELA: Writing: Provided with a graphic depicting data, students will post the graphic to <a href="#">Padlet</a> or <a href="#">GoogleJamboard</a> and accompany it with a written summary of how it can be used to identify patterns and make predictions.</td>
<td>MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
<tr>
<td>Students examine data presented in various data visualization models.</td>
<td>Analyze &amp; interpret data in various visualization models.</td>
<td>Collaborative discussion of group analysis &amp; interpretation of various visualization models</td>
<td>ELA: Writing: Provided with a data visualization model, students will write an expository interpretive statement explaining the model’s function.</td>
<td>MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
<tr>
<td>Students explain in their own words how models highlight various aspects of data.</td>
<td>Research &amp; discover various models to highlight various aspects of data.</td>
<td>Internet search for various models to present the various aspects of data in a graphic organizer or onepager.</td>
<td>ELA: Writing/Performing: Students will be given an aspect of data and will create a script and perform a TikTok explaining how models highlight the aspect of data that they are given.</td>
<td>MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
<tr>
<td>Students utilize statistical analysis software to analyze transactional data.</td>
<td>Develop Excel spreadsheets to analyze transactional data using charts &amp; graphs for graphic forms.</td>
<td>Build Excel worksheets to illustrate data.</td>
<td>ELA: Writing: Students will write a user manual for the software explaining in the manual how it will be used to analyze transactional data.</td>
<td>MOS Suite Word PowerPoint Excel Digital Tools</td>
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<tr>
<td>Students create a plan for using transactional data to develop customer intelligence.</td>
<td>Create a plan for using transactional data to develop customer intelligence using a Word document.</td>
<td>Research and create a report presenting a plan for using transactional data to develop customer intelligence.</td>
<td>ELA: Writing/Research: Students will draft a plan for using transactional data to develop customer intelligence. They will revise their plan and then use Sutori to create a timeline of how this data will be used. The timeline will include visual images of the data and will take on the role and tone of a sales tool. Students will present their project using the presentation feature of Sutori.</td>
<td>MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
</tbody>
</table>

**Key Vocabulary**

analyze, analyze data, graphic form, histograms, scatter, plots, heat maps, box plots, patterns in data, predictions, trends, fluctuations, data concentration, interpret data, data visualization models, dashboards, flowing data, models, models highlights, aspects of data, statistical, statistical analysis software, analyze, transactional data, transactional data, customer intelligence

**Work-Based Learning, Simulated Work Experiences, and Experiential Learning:**

https://analytics.google.com/analytics/academy/
CTSO Connection:

Certification/Credential Connection:
Microsoft PowerPoint, Word & Excel & Data Analysis Certifications
Unit 6 Title: Statistics

Content Standards
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.

13. Explain how categorical data may be used in decision-making in a service business to improve efficiency and profit.

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

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.

Unpacked Learning Objectives

Students know:
- How to 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.
- The patterns in data values or range of data values to improve a business process.
- How categorical data may be used in decision-making in a service business to improve efficiency and profit.
- How to identify the groups for the variable.
- Relative frequencies in the context of the data.
- How to recognize data on two quantitative variables on a scatter plot, and describe how the variables are related.
- How statistics are used to analyze and understand various business and economic problems and to formulate policies for economic growth.

Students are able to:
- Interpret 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.
- Summarize 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.
- Interpret patterns in data values or range of data values to improve a business process.
- Examine patterns in data values or range of data values to improve a business process.
- Identify patterns in data values or range of data values to improve a business process.
- Categorical data that may be used in decision-making in a service business to improve efficiency and profit.
- Sort data that may be used in decision-making in a service business to improve efficiency and profit.
- Organize data that may be used in decision-making in a service business to improve efficiency and profit.
- Identify the groups for the variable.
- Describe the relative frequencies in the context of the data.
- Summarize the relative frequencies in the context of the data.
- Recognize data on two quantitative variables on a scatter plot, and describe how the variables are related.
- Review data on two quantitative variables on a scatter plot, and describe how the variables are related.
- Locate data on two quantitative variables on a scatter plot, and describe how the variables are related.
- Describe how statistics are used to analyze and understand various business and economic problems and to formulate policies for economic growth.
- Summarize how statistics are used to analyze and understand various business and economic problems and to formulate policies for economic growth.

Students understand that:
- Statistics deals with the collection, organization, analysis, interpretation, and presentation of data used within a business.
- Data values are used to improve the process of a business.
- A business uses data in the decision-making to improve their efficiency and profit.
- Grouping variable enables the data analytics to sort data within data files into categories or groups.
- Interpreted data can detail how often a specific kind of event occurs within a business.
- Data can be related.
- Statistics are used to analyze and understand various business and economic problems and to formulate policies for economic growth.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>How to use statistics to recognize, identify, describe, analyze, organize, summarize, &amp; interpret data in business for growth?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Using data in business for collection, organization, analysis, interpretation, and presentation.</td>
</tr>
</tbody>
</table>
### Map of Student Learning by Learning Objective

|----------------------------------|--------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------|----------------------------------|
| Students apply 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. | Create a graphic organizer to compare the center (median, mean) of two or more different data sets used in business to apply statistics appropriate to the shape of the data distribution. Build a One Pager applying the statistics appropriate to the shape of the data distribution. | Create an infographic, graphic organizer or one pager to apply 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. | ELA: Writing: Students will create an [Infographic](#) depicting the comparison of two or more different data sets used in business. | Equipment List by CTE Cluster  
Link to Helpful Tech Tools |
| Students recognize and apply patterns in data values or range of data values to improve a business process. | Identify & analyze patterns in data values or range of data values to improve a business process in a One Pager, Word Report or PowerPoint Presentation. | Form an analysis report in Word or PowerPoint to present the patterns in data to improve a business process. | ELA: Writing/Analysis: After analyzing data patterns, students will follow the guidelines to write a business improvement plan that is data-based. | Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools |

[Checklist](#)  
[Link to Differentiation Examples](#)
<table>
<thead>
<tr>
<th>Students explain in their own words how categorical data may be used in decision-making in a service business to improve efficiency and profit.</th>
<th>Create a report in Word, presentation in PowerPoint or video explaining how categorical data may be used in decision-making in a service business to improve efficiency and profit.</th>
<th>Record a written or verbal narrative of how categorical data may be used in decision-making in a service business to improve efficiency and profit.</th>
<th>ELA: Writing/Using Evidence: Students will use the AEC format for writing using evidence to explain how categorical data may be used in decision-making in a service business to improve efficiency and profit.</th>
<th>Desktop or Laptop MOS Suite Word PowerPoint Digital Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students identify the groups for the variable, popular meal served, frequency of each meal served, time of day meal is served.</td>
<td>List the groups for the variable, popular meal served, frequency of each meal served, time of day meal is served using a graphic organizer, table or excel worksheet.</td>
<td>Students will then create an Infographic using Canva to demonstrate the frequency of the meal served and the most popular times of day that the item is ordered.</td>
<td>ELA: Research/Writing: Students will research their favorite fast food restaurant and the restaurant's most popular menu item. Students will then create an Infographic using Canva to demonstrate the frequency of the meal served and the most popular times of day that the item is ordered.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
<tr>
<td>Students explain the relative frequencies in the context of the data.</td>
<td>Create an analysis report in Word or StoryBoard in PowerPoint explaining the relative frequencies in the context of the data.</td>
<td>Create various publications explaining the relative frequencies in the context of the data using various digital tools for visual explanation.</td>
<td>ELA: Writing/Narrative: Students will use StoryBoardThat to create a comic strip with one of the Marvel characters as a hero working to fight crime in Birmingham. The character chosen will be using relative frequencies in the context of data to determine the best methods to choose and fight crimes.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
<tr>
<td>Students recognize data on two quantitative variables on a scatter plot, and describe how the variables are related.</td>
<td>Identify data on two quantitative variables on a scatter plot, and describe how the variables are related. in a Word document or PowerPoint Presentation.</td>
<td>Produce a written or verbal explanation of the interpretation of data on a scatter plot using various digital tools.</td>
<td>ELA: Writing: Students will complete a written explanation of the interpretation of data on a scatter plot. ELA: Writing/Speaking: Students will use VoiceThread to record a short podcast of their explanation of the data on a scatter plot.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
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</tr>
<tr>
<td>Students explain in their own words how statistics are used to analyze and understand various business and economic problems and to formulate policies for economic growth.</td>
<td>Create a report or reflection on how statistics are used to analyze and understand various business and economic problems and to formulate policies for economic growth.</td>
<td>Create a journal entry, reflection or graphic organizer to compare contrast responses relating the theme of the two readings to policies for economic growth.</td>
<td>ELA: Reading, Compare/Contrast, Writing: Students will read the NYT Paired selection that connects literature to a modern business regarding the theme of scarcity. Students will then complete the double entry journal, and write a compare contrast response relating the theme of the two readings to policies for economic growth.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
</tbody>
</table>
Key Vocabulary

statistics, shape of the data distribution, median, mean, data sets, pattern in data values, range of data value, business process, data, categorized data, decision-making, service business, efficiency, profit, variable, relative frequencies, context of the data, joint probability, marginal distribution, conditional relative frequencies, quantitative, quantitative variable, scatter plot, variables, variables are related, economic problems, formulae policies, economic growth

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

https://analytics.google.com/analytics/academy/

CTSO Connection:


Certification/Credential Connection:

Microsoft PowerPoint, Word & Excel & Data Analysis Certifications
Unit 7 Title: Probabilities

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

18. Analyze concepts of probability associated with financial planning.

Unpacked Learning Objectives

Students know:
- How to use diagrams, tables, organized lists, and area models to compute sales probability during peak season for a retail business.
- How to determine customer likes and dislikes for popular items based on previous years’ sales.
- Concepts of probability associated with financial planning

Students are able to:
- Apply diagrams, tables, organized lists, and area models to compute sales probability during peak season for a retail business.
- Identify customer likes and dislikes for popular items based on previous years’ sales.
- Discuss concepts of probability associated with financial planning.
- Describe the concepts of probability associated with financial planning.
- Summarize the concepts of probability associated with financial planning.

Students understand that:
- Various models are used to complete sales probability during peak season for a retail business.
- Data analytics can obtain data over a set period of time.
- How likely something is to happen within a business is associated with financial planning.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>How do you compute sales probability using diagrams, tables, organized lists &amp; area models &amp; analyze concepts of probability associated with financial planning?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Analyze &amp; construct various models to compute sales probability &amp; financial planning.</td>
</tr>
</tbody>
</table>
### Map of Student Learning by Learning Objective

<table>
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<tr>
<td>Students diagrams, tables, organized lists, and area models to compute sales probability during peak season for a retail business.</td>
<td>Build a collection of diagrams, tables, organized lists, and area models to compute sales probability during peak season for a retail business in a word document and powerpoint presentation.</td>
<td>Divide into teams to present various business models interpreting diagrams, tables, organized lists, and area models to compute sales probability during peak season for a retail business in a word document and powerpoint presentation or a digital tool.</td>
<td>ELA: Research, Writing, Speaking: Students will choose a business and compute the business’s sales probability for the upcoming Christmas season. Students will use Educreations to explain the business that they chose and why as well as to demonstrate the calculations they have made in order to compute probability. Each presentation needs to include the appropriate visual aids (diagrams, tables, lists, etc.) as well as an explanation of how to read and interpret the graphic.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
</tbody>
</table>

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**Equipment List by CTE Cluster**

**Link to Helpful Tech Tools**

**Learning Activity Checklist**

**Link to Differentiation Examples**

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<table>
<thead>
<tr>
<th>Students identify customer likes and dislikes for popular items based on previous year’s sales.</th>
<th>Research, analyze, &amp; interpret the data of previous year’s sales of popular items.</th>
<th>Create T-Chart or Graphic Organizer to identify the likes &amp; dislikes for popular items.</th>
<th>ELA: Research/Writing: Students will conduct research on last year’s hottest toys and gifts from the Christmas season. Students will choose one toy from the list and create a T chart of customer “likes and dislikes” based on product reviews for the item on sites like Amazon.</th>
<th>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students examine concepts of probability associated with financial planning.</td>
<td>Create a One-Pager, Powerpoint, or report to examine concepts of probability associated with financial planning.</td>
<td>Divide into teams &amp; each team examine a concept &amp; present how probability associates with financial planning.</td>
<td>ELA: Writing/Editing: Students will write an expository response explaining how the concept of probability is associated with financial planning. Students will use sources to back up their explanation and must cite sources in either APA or MLA format. Students should use the Alabama Virtual Library for their research.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
</tbody>
</table>
Key Vocabulary

diagrams, tables, organized lists, area models, probability, sales probability, peak seasons, retail business, probability, financial planning

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

https://analytics.google.com/analytics/academy/

CTSO Connection:


Certification/Credential Connection:

Microsoft PowerPoint, Word & Excel & Data Analysis Certifications
Unit 8 Title: Financial Practices

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

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

Unpacked Learning Objectives

Students know:
- How technology impacts all aspects of finance, from customer experience and operational efficiency to big data and analytics.
- Problem-solving models and statistics to develop a business plan.

Students are able to:
- Summarize how technology impacts all aspects of finance, from customer experience and operational efficiency to big data and analytics.
- Explain how technology impacts all aspects of finance, from customer experience and operational efficiency to big data and analytics.
- Create problem-solving models and statistics to develop a business plan.
- Interpret problem-solving models and statistics to develop a business plan.
- Develop problem-solving models and statistics to develop a business plan.

Students understand that:
- Technology impacts all aspects of finance.
- The financial practice of a business is used to create and to develop its business plan.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>How does technology impact all aspects of finance &amp; provide problem-solving models and statistics to develop business plans?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Explaining how technology impacts all aspects of finance &amp; using various models to develop a business plan.</td>
</tr>
</tbody>
</table>
## Map of Student Learning by Learning Objective

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<tbody>
<tr>
<td>Students explain in their own words how technology impacts all aspects of finance, from customer experience and operational efficiency to big data and analytics.</td>
<td>Create a report, presentation or video explaining how technology impacts all aspects of finance, from customer experience and operational efficiency to big data and analytics.</td>
<td>Divide into teams to present on how technology impacts selected aspects of finance as each team has a certain aspect to present on.</td>
<td>ELA: Listening, Writing, Speaking, Presenting: Students will first watch <a href="#">this video</a> on tips for including and using visual aids in presentations. Students will then write a speech detailing the technological impacts of finance. After writing their speech, students will create a <a href="#">Prezi</a> or Google SlideShow to enhance their speech and then practice their presentation until it can be delivered without notes.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
<tr>
<td>Students create problem-solving models and statistics to develop a business plan.</td>
<td>Business plan including problem-solving models &amp; statistics.</td>
<td>The entire class creates problem-solving models and statistics to develop a business plan.</td>
<td>ELA: Students will watch a <a href="#">YouTube Video</a> detailing what needs to be covered in creating a business plan. Students will then use</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel</td>
</tr>
<tr>
<td>Digital Tools</td>
<td>Coggle to set up the main categories of their business plan: purpose of your business, company description, company goals, structure, products or services, required resources, financial plan, and management and operations. One student will be designated the business owner, and they will have a partner with whom to brainstorm. Detailed information will be added to each section of the business plan using the text tools in Coggle.</td>
<td>Digital Tools</td>
<td></td>
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</tr>
</tbody>
</table>
### Key Vocabulary

| financial practices, customer experience, operational efficiency, bid data, analytics, statistical analysis software, problem-solving models, statistics, business plan |

### Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

https://analytics.google.com/analytics/academy/

### CTSO Connection:


### Certification/Credential Connection:

Microsoft PowerPoint, Word & Excel & Data Analysis Certifications
Unit 9 Title: Ethics

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

Unpacked Learning Objectives

Students know:
- Information on the ethical and responsible use of statistical data in business.

Students are able to:
- Recall information on the ethical and responsible use of statistical data in business.
- Summarize information on the ethical and responsible use of statistical data in business.

Students understand that:
- Researchers, statisticians, and analysts not only consider how data is used but also how it is used from an ethical perspective in a business.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>What is ethical and responsible use of statistical data in business?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Summary report of information on the ethical and responsible use of statistical data in business.</td>
</tr>
</tbody>
</table>
## Map of Student Learning by Learning Objective

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<tbody>
<tr>
<td>Students collect and share information on the ethical and responsible use of statistical data in business.</td>
<td>Research &amp; present information on the ethical and responsible use of statistical data in business.</td>
<td>Video or presentation in groups or individuals.</td>
<td>ELA: Writing: Write and illustrate an ethics manual detailing the responsible use of statistical data in business using an online manual template.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Learning Activity Checklist</td>
<td></td>
<td>Equipment List by CTE Cluster</td>
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<td>Link to Differentiation Examples</td>
<td></td>
<td>Link to Helpful Tech Tools</td>
</tr>
</tbody>
</table>

**Examples**
Key Vocabulary
ethics, ethical use, responsible use, statistical data

Work-Based Learning, Simulated Work Experiences, and Experiential Learning:
https://analytics.google.com/analytics/academy/

CTSO Connection:

Certification/Credential Connection:
Microsoft PowerPoint, Word & Excel & Data Analysis Certifications
Unit 10 Title: Career Opportunities

Content Standards
22. Research career opportunities that require strong analytical skills.

Unpacked Learning Objectives

Students know:
- Career opportunities that require strong analytical skills.

Students are able to:
- Examine career opportunities that require strong analytical skills.
- Summarize career opportunities that require strong analytical skills.
- Describe career opportunities that require strong analytical skills.

Students understand that:
- Careers in data analytics require strong analytical skills.

<table>
<thead>
<tr>
<th>Unit Driving/Essential Question</th>
<th>Which careers require strong analytical skills?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exemplar High Quality Unit Task</td>
<td>Career Research Plan</td>
</tr>
</tbody>
</table>

Alabama State Department of Education, Career and Technical Education/Workforce Development, Plans of Instruction
Updated as of Aug 2, 2022
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<tbody>
<tr>
<td>Students study career opportunities that require strong analytical skills.</td>
<td>Research report of business analytics career opportunities.</td>
<td>Divide into teams to discover various career opportunities that require strong analytical skills.</td>
<td>ELA: Research/Writing, Presenting: Use Occupational Outlook Handbook to explore careers that require strong analytical skills. Students will then search LinkedIn job postings to see what careers are hiring based on those looking for people with strong analytical skills. Students will write a report on their findings and share it with their classmates in a short but formal speech.</td>
<td>Desktop or Laptop MOS Suite Word PowerPoint Excel Digital Tools</td>
</tr>
</tbody>
</table>

**Integrated and Related Academic Content:** ELA, Math, Science, and/or Social Studies Concepts & Activities

**Equipment, Technology & Materials**

**Equipment List by CTE Cluster**

**Link to Helpful Tech Tools**
### Key Vocabulary

| Career Opportunities, Analytical Skills, Data Analyst, Derivatives Analyst, Climatologist, Nurse, Geneticist, Political Scientist, Rocket Engineer, Criminologist |

### Work-Based Learning, Simulated Work Experiences, and Experiential Learning:

https://analytics.google.com/analytics/academy/

### CTSO Connection:


### Certification/Credential Connection:

Business Analytics Certification