

| Planned Course: Statistics | | Course Number: 313 | Department: Mathematics |
|--|--|---|---|
| Unit: Organizing and Analyzing Data | | Grade Level: 10-12 | |
| Estimated Time: 30 days | | Level/Track: | Date Approved: 7/15/08 |
| PA Academic Standards | Core Concepts (in question format) • Skills/Knowledge | Activities/Strategies/Study Skills (identify some activities as remedial or enrichment activities) | Assessments (include types and topics) |

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| <p>2.6.11 Statistics and Data Analysis</p> <p>A. Design and conduct an experiment using random sampling. Describe the data as an example of a distribution using statistical measures of center and spread. Organize and represent the results with graphs. (Use standard deviation, variance and t-tests.)</p> | <p>► How do we display distributions?</p> <ul style="list-style-type: none"> • The student will be able to recognize categorical and quantitative variables. • The student will be able to construct and interpret a bar graph of the distribution of a categorical variable. • The student will be able to construct and recognize patterns in a line graph of a quantitative variable over time. • The student will be aware of graphical abuses. • The student will be able to construct a histogram of the distribution of a quantitative variable, both on the graphing calculator and by hand. • The student will be able to construct a stemplot of a distribution of data. | <ul style="list-style-type: none"> – Textbook exercises – Supplemental worksheets – Simulations – Experiments – Calculator usage – Videos (“Against All Odds: Inside Statistics”, The Annenberg/CPB Collection) – Computer websites (applets, data sources, teacher resources) – Use of computer statistical packages (Data Desk and Jump-Intro) | <ul style="list-style-type: none"> • Quizzes • Tests • Homework • Classwork and participation • Group and/or individual projects |
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| <p>A. Design and conduct an experiment using random sampling. Describe the data as an example of a distribution using statistical measures of center and spread. Organize and represent the results with graphs. (Use standard deviation, variance and t-tests.)</p> <p>B. Use appropriate technology to organize and analyze data taken from the local community.</p> <p>I. Describe the normal curve and use its properties to answer questions about sets of data that are assumed to be normally distributed.</p> | <p>▶ How can we describe the distribution of a quantitative variable?</p> <ul style="list-style-type: none"> • The student will be able to find the overall pattern of a histogram or stemplot and major deviations from the pattern. • The student will be able to assess whether the shape of a distribution is roughly symmetric, skewed, or neither. • The student will be able to give numerical measures of the center and spread of a distribution. • The student will be able to recognize outliers and give plausible explanations for them. | | |
| <p>A. Design and conduct an experiment using random sampling. Describe the data as an example of a distribution using statistical measures of center and spread. Organize and</p> | <p>▶ How can we describe a distribution numerically?</p> <ul style="list-style-type: none"> • The student will be able to find the median and quartiles for a set of observations. • The student will be able | | |

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| <p>represent the results with graphs. (Use standard deviation, variance and t-tests.)</p> <p>B. Use appropriate technology to organize and analyze data taken from the local community.</p> | <p>to give the five-number summary and draw and interpret a box plot both by hand and by using a graphing calculator.</p> <ul style="list-style-type: none"> • The student will be able to find percentiles and work backwards from a percentile to a data value. • The student will be able to find the mean and standard deviation for a set of observations both by hand and by using a calculator. • The student will be able to distinguish between resistant and nonresistant measures. • The student will know the basic properties of the standard deviation. | | |
| <p>I. Describe the normal curve and use its properties to answer questions about sets of data that are assumed to be normally distributed.</p> | <p>▶ What is a normal distribution?</p> <ul style="list-style-type: none"> • The student will be able to recognize density curves. • The student will be able to calculate and | | |

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| | <p>interpret the standard score of an observation.</p> <ul style="list-style-type: none"> • The student will be able to recognize the shape of a normal curve. • The student will be able to estimate normal probabilities using the 68-95-99.7% Rule. • The student will be able to find the percentile of a value from any normal distribution and the value that corresponds to a given percentile both by table and calculator. | | |
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