

LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

SPECIAL NOTE:

This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.

TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):

Please check with the LCC bookstore, <http://www.labette.edu/bookstore>, for the required texts for this class.

COURSE NUMBER: MATH 120

COURSE TITLE: ELEMENTARY STATISTICS

SEMESTER CREDIT HOURS: 3

DEPARTMENT: Mathematics

DIVISION: General Education

PREREQUISITES: Placement Test Recommendation or C or better in
MATH 115 – College Algebra

REVISION DATE: 02/2016

COURSE DESCRIPTION:

This course is an introduction to fundamental statistical concepts and techniques with computer capability for applying these techniques to data. Includes descriptive statistics, nonparametric statistics, sampling techniques, hypothesis testing and other statistical inference.

COURSE OUTCOMES AND COMPETENCIES:

**The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.
Kansas Regents Shared Number Course MAT 1020**

1. Create graphical and numerical descriptions of quantitative and qualitative data.

- Define and distinguish between categorical (qualitative) and numerical (quantitative) data.
- Organize data in frequency tables and contingency tables.
- For a given set of data, construct appropriate graphical displays of data, such as a dotplot, histogram, stem-and-leaf diagram, a bar chart or a boxplot.
- Describe the general shape of data, skewed left, skewed right, normal or other symmetric.
- Calculate the measures of central tendency including mean and median.

- Calculate the measures of dispersion including range, standard deviation, and interquartile range; explain the meaning of dispersion as it relates to a problem.
- Use a statistical package on a graphics calculator or a computer to enter data and analyze results.
- Measure the position of a data point by computing a percentile

2. Calculate probabilities and percentiles related to a general normal distribution.

- Use probability notation including the “or” condition and the “and” condition.
- Determine whether or not two events are mutually exclusive.
- Determine whether or not two events are independent.
- Calculate the probability of compound events.
- Calculate conditional probabilities; explain the meaning of conditional probabilities.
- Find and interpret the mean and the standard deviation of a probability distribution.
- Recognize Bernoulli populations.
- Use the normal distribution to solve percent problems for normally distributed populations.
- Use the normal distribution to solve probability problems for normally distributed random variables.

3. Distinguish differences in data analysis and interpretation between observational data and data from designed experiments.

- Define and distinguish between categorical (qualitative) and numerical (quantitative) data.
- Distinguish between data from an observational study and data from a designed experiment.

4. Calculate and interpret a confidence interval for a single parameter, using both large and small samples.

- Construct confidence intervals for a population mean using both large and small samples.
- Construct confidence intervals for a population variance and standard deviation.
- Construct confidence intervals for a population proportion.
- Interpret Confidence Intervals within context of applications problems.

5. Perform and interpret a test of hypothesis for a single parameter, using both large and small samples.

- Perform hypothesis tests for a population mean and a difference of two population means and interpret results.
- Perform a hypothesis test for a population proportion and a difference of two population proportions and interpret results.
- Explain Type I error, Type II error, p-value, significance level and power of test in context.
- Perform Chi-squared tests.

6. Perform and interpret statistical inference on the difference of two parameters.

- Construct confidence intervals for a population mean and a difference of two population means and interpret them in context.
- Construct confidence intervals for a population proportion and a difference of two population proportions and interpret them in context.

7. Fit and interpret a simple linear regression model, including correlation and scatterplots.

- Create a scatter plot and calculate a correlation coefficient for bivariate data.
- Construct a linear regression equation, interpret the results, and test significance of slope.
- Use a linear regression equation to make predictions about data.
- Calculate the coefficient of determination for a linear regression equation and interpret results.