Math 137: Pre-Statistics Algebra

1. COURSE CONTENT AND OBJECTIVES:

COURSE CONTENT AND SCOPE - **Lecture:** Outline the topics included in the lecture portion of the course *(Outline reflects course description, all topics covered in class).*	Hours Per Topic	COURSE OBJECTIVES - **Lecture:** Upon successful completion of this course, the student will be able to...*(Use action verbs - see Bloom's Taxonomy for 'action verbs requiring cognitive outcomes.')*
Formulas and algebraic expressions: Formula; order of operations; algebraic expressions and properties.	12	Evaluate algebraic expressions using real numbers and the order of operations; apply formulas in problems; simplifying algebraic expressions using like terms, properties of exponents and the distributive and associative properties.
Linear equations and inequalities in one variable: Addition and multiplication properties of inequalities; linear equations; formulas; ratios and proportions; absolute value equations and inequalities; application problems.	13	Solve linear equations and inequalities in one variable; construct linear equations to solve various application problems; analyze simple data sets by using appropriate exploratory data analysis techniques; solve problems involving ratios, proportions and percents; solve absolute value equations and inequalities.
Analyzing and producing data: Samples and sample statistics vs. population and population parameters; observation vs. experiment; principles of responsible survey and experimental design; purpose of randomization and random sampling; simple random samples and other sampling design; rival hypothesis and cautions about sample surveys, experimentation, and population claims; application-producing your own data; correlation verses causation.	10	Classify and compare branches of statistics and types of data; identify and evaluate sampling methodologies; analyze published articles by applying design of experiments principles.
Sample statistics and graphs: Measures of center-mean, median, mode, midrange; measures of position-quartiles, percentiles and boxplots; measures of spread-range, interquartile range, standard deviation; sample statistics; bar charts, pie charts, stem and leaf plots and histograms.	13	Apply sample statistics and graphs to analyze real data sets; construct and read bar charts, pie charts, stem and leaf plots, histograms, and scatterplots; present statistical results verbally and in written form by analyzing data and solving applied problems; assess feasible solutions and errors by using estimation effectively; calculate measures of central tendency and measures of dispersion, and distinguish when to apply them appropriately.
Linear equations and inequalities in two variables: The rectangular coordinate system; graphs; slopes of linear equations; average rate of change; equation of a line; linear and non-linear correlation; regression line.	15	Calculate the slope and equation of a line in two variables and graph; distinguish linear correlation and analyze a data set using basic regression analysis techniques.
Functions: Relations; functions and function notation; linear functions and applications; graphing various functions; composite and Inverse functions; exponents, scientific notation and exponential functions with applications; logarithms and logarithmic functions with application; exponential equations; logarithmic equations with applications; direct and indirect variation.	13	Graph and evaluate various functions including linear, exponential, inverse, composite and logarithmic; analyze relationships between variables including direct and indirect variation; calculate numerical values including scientific notation.

Probability: Sequences and series;basic probability with applications.	12	Identify and manipulate sequences and series; interpret summation notation and determine sums of sequences; distinguish patterns in data sets including sequences and calculate quantities using summation notation; solve basic probability problems.
Final examination.	2	Final examination.
Total: Total Lecture Hours In Section I Class Hours:	90 90	

*Total lecture and laboratory hours (which include the final examination) must equal totals on page 1.
**In general "activity" courses or portions of courses are classified "laboratory."