

ALEKS® Course Syllabus

Course Name: Math 113-010 Introduction to Statistics	Course Code: WLMAK-XNDX4
ALEKS Course: Introduction to Statistics	Instructor: Prof. Stone
Course Dates: Begin: 01/22/2018 End: 05/21/2018	Course Content: 117 topics
Textbook: Bluman: Elementary Statistics: A Step by Step Approach, 9th Ed. (McGraw-Hill) - ALEKS 360	

Dates	Objective
01/22/2018 - 02/04/2018	1. Course Readiness (19 topics)
02/05/2018 - 02/07/2018	2. Ch.1-The Nature of Probability and Statistics (2 topics)
02/08/2018 - 02/13/2018	3. Ch.2-Frequency Distributions and Graphs (9 topics)
02/14/2018 - 02/20/2018	4. Ch.3-Data Description (13 topics)
02/21/2018 - 03/11/2018	5. Ch.4-Probability and Counting Rules (23 topics)
03/12/2018 - 03/21/2018	6. Ch.5-Discrete Probability Distributions (6 topics)
03/22/2018 - 04/07/2018	7. Ch.6-The Normal Distribution (11 topics)
04/08/2018 - 04/15/2018	8. Ch.7-Confidence Intervals and Sample Size (9 topics)
04/16/2018 - 04/30/2018	9. Ch.8-Hypothesis Testing (7 topics)
05/01/2018 - 05/03/2018	10. Ch.9-Testing the Difference between Two Means, Two Proportions, and Two Variances (10 topics)
05/04/2018 - 05/08/2018	11. Ch.10-Correlation and Regression (8 topics)

Course Readiness (19 topics, due on 02/04/2018)

Course Readiness (19 topics)

- Order of operations with whole numbers
- Order of operations with whole numbers and grouping symbols
- Decimal place value: Hundreds to ten thousandths
- Rounding decimals
- Converting between percentages and decimals
- Finding a percentage of a whole number without a calculator: Basic
- Writing a ratio as a percentage without a calculator
- Converting a percentage to a fraction in simplest form
- Converting a fraction to a percentage: Denominator of 20, 25, or 50
- Summation of indexed data
- Solving a two-step equation with integers
- Solving a linear equation with several occurrences of the variable: Variables on the same side and distribution
- Solving a linear equation with several occurrences of the variable: Variables on both sides and distribution
- Y-intercept of a line
- X- and y-intercepts of a line given the equation in standard form
- Writing an equation of a line given the y-intercept and another point
- Graphing a line given its x- and y-intercepts
- Graphing a line given its equation in slope-intercept form
- Graphing a line through a given point with a given slope

Ch.1-The Nature of Probability and Statistics (2 topics, due on 02/07/2018)

Section 1.2 (2 topics)

- Classification of variables and levels of measurement
- Discrete versus continuous variables

Ch.2-Frequency Distributions and Graphs (9 topics, due on 02/13/2018)

Section 2.2 (4 topics)

- Histograms for grouped data
- Frequency polygons for grouped data
- Interpreting relative frequency histograms
- Cumulative distributions and ogives

Section 2.3 (5 topics)

- Interpreting pie charts
- Computations from pie charts
- Double bar charts
- Interpreting a stem-and-leaf display
- Using back-to-back stem-and-leaf displays to compare data sets

Ch.3-Data Description (13 topics, due on 02/20/2018)

Section 3.1 (6 topics)

- Comparing means without calculation
- Mean, median, and mode: Computations
- Rejecting unreasonable claims based on average statistics
- Weighted mean: Tabular data
- Estimating the mean of grouped data
- Mean, median, and mode: Comparisons

Section 3.2 (5 topics)

- Comparing standard deviations without calculation
- Population standard deviation
- Sample standard deviation
- Estimating the standard deviation of grouped data
- Chebyshev's theorem and the empirical rule

Section 3.3 (1 topic)

- Percentiles

Section 3.4 (1 topic)

- Box-and-whisker plots

Ch.4-Probability and Counting Rules (23 topics, due on 03/11/2018)

Section 4.1 (4 topics)

- Venn diagrams: Two events
- Venn diagrams: Three events
- Venn diagrams: Word problems
- Outcomes and event probability

Section 4.2 (5 topics)

- Probabilities involving two dice: Decimal answers
- Probability of intersection or union: Word problems
- Probability of union: Basic
- Mutually exclusive events: Two events
- The curious die

Section 4.3 (9 topics)

- Probabilities of draws with replacement
- Independent events: Basic
- Probability of independent events: Decimal answers
- Calculating relative frequencies in a contingency table
- Conditional probability: Basic

- Probability of dependent events
- Intersection and conditional probability
- Tree diagrams for conditional probabilities
- Law of total probabilities

Section 4.4 (4 topics)

- Factorial expressions
- Combinations
- Permutations
- Permutations, combinations, and the multiplication principle for counting

Section 4.5 (1 topic)

- Probabilities of draws without replacement

Ch.5-Discrete Probability Distributions (6 topics, due on 03/21/2018)

Section 5.1 (2 topics)

- Discrete probability distribution: Basic
- Discrete probability distribution: Word problems

Section 5.2 (1 topic)

- Expectation and variance of a random variable

Section 5.3 (3 topics)

- Binomial problems: Mean and standard deviation
- Binomial problems: Basic
- Binomial problems: Advanced

Ch.6-The Normal Distribution (11 topics, due on 04/07/2018)

Section 6.1 (4 topics)

- Standard normal probabilities
- Standard normal values: Basic
- Standard normal values: Advanced
- Normal versus standard normal density curves

Section 6.2 (3 topics)

- Normal distribution raw scores
- Mean and deviation of a normal distribution
- Normal distribution: Word problems

Section 6.3 (2 topics)

- Central limit theorem: Sample mean
- Central limit theorem: Sample sum

Section 6.4 (2 topics)

- Normal approximation to binomial
- Central limit theorem: Sample proportion

Ch.7-Confidence Intervals and Sample Size (9 topics, due on 04/15/2018)

Section 7.1 (2 topics)

- Confidence interval for the population mean: Use of the standard normal
- Choosing an appropriate sample size

Section 7.2 (3 topics)

- *t* distribution
- Selecting a distribution for inferences on the population mean
- Confidence interval for the population mean: Use of the *t* distribution

Section 7.3 (2 topics)

- Making reasonable inferences based on proportion statistics
- Confidence interval for a population proportion

Section 7.4 (2 topics)

- Chi-square distribution
- Confidence interval for the population standard deviation

Ch.8-Hypothesis Testing (7 topics, due on 04/30/2018)

Section 8.1 (2 topics)

- Type I and Type II errors
- Determining null and alternative hypotheses

Section 8.2 (1 topic)

- Hypothesis test for the population mean: Z test

Section 8.3 (1 topic)

- Hypothesis test for the population mean: t test

Section 8.4 (1 topic)

- Hypothesis test for a population proportion

Section 8.5 (1 topic)

- Hypothesis test for the population variance or standard deviation

Section 8.6 (1 topic)

- Type I and Type II errors and power

Ch.9-Testing the Difference between Two Means, Two Proportions, and Two Variances (10 topics, due on 05/03/2018)

Section 9.1 (2 topics)

- Confidence interval for the difference of population means: Use of the standard normal
- Hypothesis test for the difference of population means: Z test

Section 9.2 (2 topics)

- Confidence interval for the difference of population means: Use of the t distribution
- Hypothesis test for the difference of population means: t test

Section 9.3 (1 topic)

- Hypothesis test for the difference of population means: Paired comparisons

Section 9.4 (2 topics)

- Confidence interval for the difference of population proportions
- Hypothesis test for the difference of population proportions

Section 9.5 (3 topics)

- F distribution
- Confidence interval for the ratio of population variances
- Hypothesis test for the ratio of population variances

Ch.10-Correlation and Regression (8 topics, due on 05/08/2018)

Section 10.1 (1 topic)

- Linear relationship and the sample correlation coefficient

Section 10.2 (4 topics)

- Sketching the least-squares regression line
- Predictions from the least-squares regression line
- Computing the sample correlation coefficient and the coefficients for the least-squares regression line
- Hypothesis tests for the correlation coefficient and the slope of the least-squares regression line

Section 10.3 (2 topics)

- Explained and unexplained variation and the least-squares regression line
- Confidence intervals and prediction intervals from simple linear regression

Section 10.4 (1 topic)

- Interpreting the regression coefficients