The Practice of Statistics, AP Pacing Guide

This document is an estimation of pacing for the school year. The teacher will have to make adjustments based on student needs and skill levels. It is our expectation that we will get most students to standard before moving on to the next section, so flexibility is required with this document. Again, these are only estimated completion dates!

On page 2, there is an estimate of the number of days each topic will take. This estimation does not include days for local and state assessments (including but not limited to NWEA, finals, CAASPP, etc). Plus standards will or will not be covered based on teacher discretion as they are enrichment standards rather than core standards. As always, it is our goal to get as much material covered in the school year with student comprehension, so additional topics can be covered if a class is excelling past this timeline.

Course Skills: *Italic indicated INFERENCE skills.*

Skill Category 1: Selecting Statistical Methods

- 1.A Identify the question to be answered or problem to be solved (not assessed).
- 1.B Identify key and relevant information to answer a question or solve a problem.
- 1.C Describe an appropriate method for gathering and representing data.
- *1.D Identify an appropriate inference method for confidence intervals.*
- *1.E Identify an appropriate inference method for significance tests.*
- *1.F Identify null and alternative hypotheses.*

Skill Category 2: Data analysis

- 2.A Describe data presented numerically or graphically.
- 2.B Construct numerical or graphical representations of distributions.
- 2.C Calculate summary statistics, relative positions of points within a distribution, correlation, and predicted response.
- 2.D Compare distributions or relative positions of points within a distribution.

Skill Category 3: Using probability and Simulation

- 3.A Determine relative frequencies, proportions, or probabilities using simulation or calculations.
- 3.B Determine parameters for probability distributions.
- 3.C Describe probability distributions.
- *3.D Construct a confidence interval, provided conditions for inference are met.*
- *3.E Calculate a test statistic and find a p-value, provided conditions for inference are met.*

Skill Category 4: Statistical Argumentation

- 4.A Make an appropriate claim or draw an appropriate conclusion.
- 4.B Interpret statistical calculations and findings to assign meaning or assess a claim.
- *4.C Verify that inference procedures apply in a given situation.*
- *4.D Justify a claim based on a confidence interval.*
- *4.E Justify a claim using a decision based on significance tests.*

Overview of Content:

The big ideas serve as the foundation of the course and allow students to create meaningful connections among concepts. They are often overarching concepts or themes that become threads that run throughout the course. Revisiting the big ideas and applying them in a variety of contexts allows students to develop deeper conceptual understanding. Below are the big ideas of the course and a brief description of each.

BIG IDEA 1: VARIATION AND DISTRIBUTION (VAR)

The distribution of measures for individuals within a sample or population describes variation. The value of a statistic varies from sample to sample. How can we determine whether differences between measures represent random variation or meaningful distinctions? Statistical methods based on probabilistic reasoning provide the basis for shared understandings about variation and about the likelihood that variation between and among measures, samples, and populations is random or meaningful.

BIG IDEA 2: PATTERNS AND UNCERTAINTY (UNC)

Statistical tools allow us to represent and describe patterns in data and to classify departures from patterns. Simulation and probabilistic reasoning allow us to anticipate patterns in data and to determine the likelihood of errors in inference.

BIG IDEA 3: DATA-BASED PREDICTIONS, DECISIONS, AND CONCLUSIONS (DAT)

Data-based regression models describe relationships between variables and are a tool for making predictions for values of a response variable. Collecting data using random sampling or randomized experimental design means that findings may be generalized to the part of the population from which the selection was made. Statistical inference allows us to make data-based decisions.

Estimated Timeline of Topics

Topic	Standards Covered	Estimated Number of Days	Estimated Start Month
Exploring One Variable Data and Modeling Distributions of Data	VAR: 1.A, 2.A, 2.D, 3.A UNC: 2.A, 2.B, 2.C, 2.D, 4.B	20 Days	August
Describing Relationships	VAR: 1.A UNC: 2.A, 2.B, 2.C, 2.D DAT: 2.A, 2.B, 2.C, 4.B	16 Days	September
Design Studies	VAR: 1.A, 1.B, 1.C, 4.B DAT: 1.C, 4.A	14 Days	October
Probability and Random Variables	VAR: 1.A, 2.B, 3.A, 3.B, 3.C, 4.B UNC: 3.A, 3.B, 4.B	22 Days	November
Sampling Distributions	VAR: 1.A, 3.A, 3.C UNC: 3.B, 3.C, 4.B	12 Days	January
Inference for Categorical Data: Proportions (parts of Ch 8, 9 and 10).	VAR: 1.A, 1.E, 1.F, 3.E, 4.B, 4.C, 4.E UNC: 1.B, 1.D, 3.A, 3.D, 4.A, 4.B, 4.C, 4.D DAT: 3.E, 4.B, 4.E	18 days	February
Inference for Quantitative Data: Means (parts of Ch 8, 9 and 10)	VAR: 1.A, 1.D, 1.E, 1.F, 3.C, 3.D, 3.E, 4.B, 4.C, 4.E UNC: 1.D, 3.C, 3.D, 4.A, 4.B, 4.C, 4.D DAT: 3.E, 4.B, 4.E	20 days	March
Inference for Categorical Data: Chi Square	VAR: 1.A, 1.E, 1.F, 3.A, 3.C, 3.E, 4.B, 4.C, 4.E DAT: 3.E, 4.B, 4.E	11 Days	April
Inference for Quantitative Data: Slopes	VAR: 1.A, 1.E, 1.F, 3.E, 4.B, 4.C, 4.E UNC: 1.D, 3.D, 4.A, 4.B, 4.C, 4.D DAT: 3.E, 4.B, 4.E	9 days	April