

**Unit 1**

**Surveys & Experimental Design**

<b>Duration</b>	<b>Aug-Sept.</b>	<b>12 Days</b>	<b>Assessed</b>
<b>Priority Standard(s)</b>		II. Sampling and Experimentation: Planning and conducting a study. Data must be collected according to a well-developed plan if valid information on a conjecture is to be obtained. This plan includes clarifying the question and deciding upon a method of data collection and analysis. A. Overview of methods of data collection 1. Census 2. Sample survey 3. Experiment 4. Observational study B. Planning and conducting surveys 1. Characteristics of a well-designed and well-conducted survey 2. Populations, samples and random selection 3. Sources of bias in sampling and surveys 4. Sampling methods, including simple random sampling, stratified random sampling and cluster sampling C. Planning and conducting experiments 1. Characteristics of a well-designed and well-conducted experiment 2. Treatments, control groups, experimental units, random assignments and replication 3. Sources of bias and confounding, including placebo effect and blinding 4. Completely randomized design 5. Randomized block design, including matched pairs design D. Generalizability of results and types of conclusions that can be drawn from observational studies, experiments and surveys	
	II.A-D		
<b>Supporting Standard(s)</b>			

**Unit 2**

**Exploring Data**

Duration	Sept	11 Days	Assessed
<b>Priority Standard(s)</b>	I.A.1-4	A. Constructing and interpreting graphical displays of distributions of univariate data (dotplot, stemplot, histogram) 1. Center and spread 2. Clusters and gaps 3. Outliers and other unusual features 4. Shape	
	I.B.2-4	B. Summarizing distributions of univariate data 2. Measuring spread: range, interquartile range, standard deviation 3. Measuring position: quartiles only 4. Using boxplots	
	I.C.1-4	C. Comparing distributions of univariate data (dotplots, back-to-back stemplots, parallel boxplots) 1. Comparing center and spread: within group, between group variation 2. Comparing clusters and gaps 3. Comparing outliers and other unusual features 4. Comparing shapes	
	I.E.2-4	E. Exploring categorical data 2. Marginal and joint frequencies for two-way tables 3. Conditional relative frequencies and association 4. Comparing distributions using bar charts	
<b>Supporting Standard(s)</b>	I.B.1	B. Summarizing distributions of univariate data 1. Measuring center: median, mean	
	I.E.1	E. Exploring categorical data 1. Frequency tables and bar charts	

**Unit 3**

**Unit 3 Modeling Distributions of Data**

<b>Duration</b>	<b>Sept-Oct</b>	<b>10 Days</b>	<b>Assessed</b>
<b>Priority Standard(s)</b>	I.B.3	B. Summarizing distributions of univariate data 3. Measuring position: percentiles, standardized scores (z-scores)	
	I.B.5	5. The effect of changing units on summary measures	
	III.C.1-3	III. Anticipating Patterns: Exploring random phenomena using probability and simulation C. The normal distribution 1. Properties of the normal distribution 2. Using tables of the normal distribution 3. The normal distribution as a model for measurements	
<b>Supporting Standard(s)</b>	I.A.1-2	A. Constructing and interpreting graphical displays of distributions of univariate data (cumulative frequency plot only) 1. Center and spread 2. Clusters and gaps	



**Unit 5**  
**Probability**

<b>Duration</b>	Nov	<b>10 Days</b>	<b>Assessed</b>
<b>Priority Standard(s)</b>	III.A.1	Anticipating Patterns: Exploring random phenomena using probability and simulation A. Probability 1. Interpreting probability, including long-run relative frequency interpretation	
	III.A.2	2. "Law of Large Numbers" concept	
	III.A.3	3. Addition rule, multiplication rule, conditional probability and independence	
<b>Supporting Standard(s)</b>	III.A.3	3. Addition rule, multiplication rule	

**Unit 6**

**Sampling Distributions**

<b>Duration</b>	<b>Dec.</b>	<b>11 Days</b>	<b>Assessed</b>
<b>Priority Standard(s)</b>	III.D.1	Anticipating Patterns: Exploring random phenomena using probability and simulation D. Sampling distributions 1. Sampling distribution of a sample proportion	
	III.D.2	Anticipating Patterns: Exploring random phenomena using probability and simulation D. Sampling distributions 2. Sampling distribution of a sample mean	
	III.D.3	Anticipating Patterns: Exploring random phenomena using probability and simulation D. Sampling distributions 3. Central Limit Theorem	
	III.D.6	Anticipating Patterns: Exploring random phenomena using probability and simulation D. Sampling distributions 6. Simulation of sampling distributions	
	III.A.4	Discrete random variables and their probability distributions, mean and standard deviation of a discrete random variable.	
<b>Supporting Standard(s)</b>			

**Unit 7**

**Confidence Intervals**

<b>Duration</b>	<b>Jan.</b>	<b>11 Days</b>	<b>Assessed</b>
<b>Priority Standard(s)</b>		Statistical Inference: Estimating population parameters and testing hypotheses A. Estimation (point estimators and confidence intervals) 1. Estimating population parameters and margins of error 2. Properties of point estimators, including unbiasedness and variability 3. Logic of confidence intervals, meaning of confidence level and confidence intervals, and properties of confidence intervals 4. Large sample confidence interval for a proportion	
	IV.A.1-4	4. Large sample confidence interval for a proportion	
	IV.A.6	6. Confidence interval for a mean	
<b>Supporting Standard(s)</b>	III.D.7	Sampling Distributions: 7. t-distribution	

**Unit 8**

**Hypothesis Tests**

<b>Duration</b>				<b>Assessed</b>
	Jan. -Feb	<b>11 Days</b>		
<b>Priority Standard(s)</b>	IV.B.1	B. Tests of significance 1. Logic of significance testing, null and alternative hypotheses; p-values; one- and two-sided tests; concepts of Type I and Type II errors; concept of power		
	IV.B.2	2. Large sample test for a proportion		
	IV.B.4	4. Test for a mean		
<b>Supporting Standard(s)</b>				



**Unit 9**

**Random Variables**

Duration	Feb	10 Days	Assessed
<b>Priority Standard(s)</b>	III.A.4-6,	III. Anticipating Patterns: Exploring random phenomena using probability and simulation (20%–30%) Probability is the tool used for anticipating what the distribution of data should look like under a given model. A. Probability 4. Discrete random variables and their probability distributions, including binomial and geometric 5. Simulation of random behavior and probability distributions 6. Mean (expected value) and standard deviation of a random variable, and linear transformation of a random variable	
	III.B.1-2	B. Combining independent random variables 1. Notion of independence versus dependence 2. Mean and standard deviation for sums and differences of independent random variables	
<b>Supporting Standard(s)</b>			

**Unit 10**

**Two-sample Inference**

<b>Duration</b>	<b>Feb.-March</b>	<b>11 Days</b>	<b>Assessed</b>
<b>Priority Standard(s)</b>	III.D.4-5	D. Sampling distributions 4. Sampling distribution of a difference between two independent sample proportions 5. Sampling distribution of a difference between two independent sample means	
	IV.A.5,7	5. Large sample confidence interval for a difference between two proportions 7. Confidence interval for a difference between two means (unpaired and paired)	
	IV.B.3,5	3. Large sample test for a difference between two proportions 5. Test for a difference between two means (unpaired and paired)	
<b>Supporting Standard(s)</b>			

Unit 11

**Chi-Square Tests**

Duration		March	8 Days	Assessed
Priority Standard(s)	III.D.8	8. Chi-square distribution		
	IV.B.7	6. Chi-square test for goodness of fit, homogeneity of proportions, and independence (one- and two-way tables)		
Supporting Standard(s)				

**Unit 12**

**Inference on Regression**

<b>Duration</b>	April	<b>8 Days</b>	<b>Assessed</b>
<b>Priority Standard(s)</b>	IV.A.8	8. Confidence interval for the slope of a least-squares regression line	
	IV.B.7	7. Test for the slope of a least-squares regression line	
<b>Supporting Standard(s)</b>			