

Foothill College Submission Course Outlines

For Faculty and Staff use only

Physical Sciences, Mathematics & Engineering

MATH
17A

INTEGRATED STATISTICS I

Fall 2011

10 Units

Total Quarter Learning Hours: 360 (Total of All Lecture, Lecture/Lab, Lab, TBA and Homework hours X 12)

Lecture Hours: 10	Lab Hours:	Lecture/Lab:	TBA Hours:	Homework Hours: 20
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Note: If Lab hours are specified, the *item 10. Lab Content* field must be completed.

Repeatability -

Statement: Not Repeatable.

Status -

Course Status: Active	Grading:	Letter
Degree Status: Applicable	Credit Status:	Credit
Degree or Certificate Requirement: AA Degree, AS Degree, Foothill GE		
GE Status: Communication & Analytical Thinking		

Articulation Office Information -

C.I.D. Notation:

Transferability:

Validation:

Division Dean Information -

Seat Count: 35	Load Factor: 0.222	FOAP Code: 11400012505170100
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1. Description -

This is the first quarter of two in the Statway sequence. This sequence covers concepts and methods of statistics with an emphasis on data analysis. Topics include methods for collecting data, graphical and numerical descriptive statistics, correlation, simple linear regression, basic concepts of probability, confidence intervals and hypothesis tests for means and proportions, chi-square tests, and ANOVA. Application problems will be taken from the fields of business, economics, medicine, engineering, education, psychology, sociology and from culturally diverse situations. This sequence is recommended for students with majors that require no mathematics beyond freshman-level statistics.

Prerequisites: Satisfactory score on the mathematics placement test; MATH 200, 230, 230J, 234, or 238.

Advisory: Eligibility for ENGL 1A or ESLL 26

2. Course Objectives -

The student will be able to:

- Examine statistical studies and discuss an overview of the data analysis process.
- Analyze data graphically and numerically.
- Examine, use, and interpret bivariate data.
- Model nonlinear relationships.

- Compute basic probabilities.
- Use appropriate technology as a tool for doing statistics.
- Discuss mathematical problems and write solutions in accurate mathematical language and notation.
- Interpret mathematical solutions.

3. Special Facilities and/or Equipment -

- Graphing Calculator
- Access to Microsoft Excel software

4. Course Content (Body of knowledge) -

- Examine statistical studies and discuss an overview of the data analysis process.
 - Types of statistical studies
 - Observational
 - Experimental
 - Sampling methodologies
 - Simple random sampling
 - Cluster sampling
 - Stratified sampling
 - Systematic sampling
 - Convenience sampling
 - Experimental design
 - Data analysis process
 - Steps
 - Formulate question
 - Identify appropriate data
 - Select an appropriate data collection strategy
 - Collect, summarize, display data
 - Draw a conclusion
 - Interpret in context
 - Vocabulary
 - Variables
 - Population
 - Sample
 - Descriptive statistics
 - Inferential statistics
- Analyze data graphically and numerically.
 - Graphical displays
 - Bar charts
 - Pie charts
 - Dot plots
 - Histograms
 - Stem-and-leaf plots
 - Box plots
 - Time series
 - Measures of center
 - Mean
 - Median
 - Mode
 - Measure of variability
 - Range
 - Variance
 - Standard deviation
 - Measures of relative standing
 - Percentiles
 - Quartiles
 - Z-scores
 - Empirical rule
 - Chebyshev's rule
 - Comparing distributions
 - Graphically
 - Numerically
 - Numeracy
 - Ordering
 - Comparing
 - Estimating

- Rounding
- Absolute difference
- Relative difference
- Units
- Proportional reasoning
- Inequalities
- Rational numbers
- Square root of a number
- Exponents
- Solving equations
- Scientific notation
- Examine bivariate data.
 - Scatter plots
 - Form
 - Interpretations
 - Correlation
 - Strength
 - Positive
 - Negative
 - Linear regression
 - Interpretations
 - Extrapolation
 - Interpolation
 - Linear functions
 - Interpret slope
 - Interpret intercepts
 - Evaluate expressions
 - Multiple representations
 - Tables
 - Graphs
 - Symbolic form
- Model nonlinear relationships.
 - Exponential Models
 - Exponential growth and decay
 - Evaluating expressions
 - Interpreting parameters
 - Multiple representations
 - Tables
 - Graphs
 - Symbolic form
 - Quadratic models
 - Evaluating expressions
 - Multiple representations
 - Tables
 - Graphs
 - Symbolic form
 - Comparing models
 - linear
 - exponential
 - quadratic
- Compute basic probabilities.
 - Empirical probability
 - Contingency tables
 - Conditional probability
 - Independence
- Use appropriate technology as a tool for doing statistics.
 - Computer lab assignments
 - Excel
- Discuss mathematical problems and write solutions in accurate mathematical language and notation.
 - Application problems from various disciplines
 - Proper notation
- Interpret mathematical solutions.
 - Explain the significance of solutions to application problems

5. Repeatability - Moved to header area.

6. Methods of Evaluation -

- Written homework
- Quizzes
- Tests
- Proctored comprehensive final examination
- Collaborative project

7. Representative Text(s) -

Richelle M. Blair. Introductory Algebra. Boston: Pearson Addison Wesley, 2006.

The Consortium for Foundation Mathematics. Mathematics in Action: an Introduction to Algebraic, graphical, and numerical problem solving. 3rd edition. Boston: Pearson Addison Wesley, 2008.

Martin-Gay, Green Intermediate Algebra: A Graphing Approach, 4th ed. Upper Saddle River, NJ: Pearson Prentice Hall, 2009.

Brase, H. and C. Brase. Understandable Statistics: Concepts and Methods, 9th ed. Houghton Mifflin, 2009.

8. Disciplines -

Mathematics

9. Method of Instruction -

Lecture, discussion, cooperative learning exercises

10. Lab Content - No content

11. Honors Description - No longer used. Integrated into main description section.

12. Examples of Required Reading and Writing and Outside of Class Assignments -

- Homework Problems: Homework problems covering subject matter from text and related material ranging from 30 - 60 problems per week. Students will need to employ critical thinking in order to complete assignments.
- Lecture: Five hours per week of lecture covering subject matter from text and related material. Reading and study of the textbook, related materials and notes.
- Projects: Student projects covering subject matter from textbook and related materials. Projects will require students to discuss mathematical problems, write solutions in accurate mathematical language and notation and interpret mathematical solutions. Projects may require the use of Excel.
- Worksheets: Problems and activities covering the subject matter. Such problems and activities will require students to think critically. Such worksheets may be completed both inside and/or outside of class.

13. Need/Justification -

This two quarter Liberal Arts Mathematics sequence is designed to meet the AA degree mathematics proficiency requirement as well as CSU-GE and IGETC requirements for quantitative reasoning. This sequence provides a way for the general transfer student to meet these requirements without taking those courses designed to meet major preparation requirements in science, engineering or business.

Course status: *Active*

Development status: Proof

Owner-Editor: georgiouion@foothill.edu

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Comments:

MurrayPeter@foothill.edu wrote: Plz put in TBA Hour until they are removed.
MurrayPeter@foothill.edu wrote: GREAT Work
georgiouion@foothill.edu wrote: 11 and 13 pending (Jenne and Marnie, respectively)
Check course description with Peter/ CA 5.

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Submission Course Outlines

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