

## Foothill College Submission Course Outlines

For Faculty and Staff use only

### Physical Sciences, Mathematics & Engineering

MATH 17B INTEGRATED STATISTICS II

Fall 2011

5 Units

**Total Quarter Learning Hours:** 180 (Total of All Lecture, Lecture/Lab, Lab, TBA and Homework hours X 12)

**Lecture Hours:** 5 **Lab Hours:** **Lecture/Lab:** **TBA Hours:** **Homework Hours:** 10

**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:** 0.111 **FOAP Code:** 11400012505170100

#### 1. Description -

This is the second 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.

Prerequisite: Math 17A

Advisory: Eligibility for Engl 1A or ESLL 26

#### 2. Course Objectives -

The student will be able to:

- Analyze probability distributions.
- Investigate statistical inference.
- Apply techniques of statistical inference to a single proportion
- Apply techniques of statistical inference to the difference between two population proportions.
- Apply techniques of statistical inference to means.
- Apply techniques of statistical inference to categorical data.
- Apply techniques of statistical inference to multiple means.

- 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) -

- Analyze probability distributions.
  - Random variables
  - Discrete distributions
    - Mean
    - Standard deviation
    - Binomial
    - Application problems from various disciplines
  - Continuous distributions
    - Equating areas with probabilities
    - Normal distributions
    - Application problems from various disciplines
- Investigate statistical inference.
  - Sampling distributions
    - Mean
    - Standard deviation
    - Central Limit Theorem
  - Logical reasoning
- Apply techniques of statistical inference to a single proportion.
  - Confidence intervals
    - Point estimate
    - Interval estimate
    - Margin of error
    - Confidence level
    - Interpretation
  - Hypothesis tests
    - Null hypothesis
    - Alternate hypothesis
    - Test statistic
    - P-value
    - Decision rule
    - Interpretation
    - Application problems from various disciplines
- Apply techniques of statistical inference to the difference between two population proportions.
  - Confidence intervals
  - Hypothesis tests
  - Application problems from various disciplines
- Apply techniques of statistical inference to means
  - One-sample confidence interval
  - Two-sample confidence interval
  - One-sample T-test
  - Two-sample T-test
  - Paired T-test
  - Application problems from various disciplines
- Apply techniques of statistical inference to categorical data.
  - Chi square goodness of fit test
  - Chi square tests for independence
  - Chi square tests for homogeneity
- Apply techniques of statistical inference to multiple means.
  - One-way analysis of variance
  - Pair-wise comparisons
- 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.

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**Course status:** *Active*

**Development status:** Proof

**Owner-Editor:** georgiouion@foothill.edu

**Edit History:**

User: Dean -	ID: MurrayPeter@foothill.edu -	Modified: 2010-10-11 21:19:56
User: Dean -	ID: MurrayPeter@foothill.edu -	Modified: 2010-10-11 15:15:06
User: Dean -	ID: MurrayPeter@foothill.edu -	Modified: 2010-10-11 15:13:48
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-10-11 12:23:44
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-10-04 09:46:09
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-10-01 15:04:50
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-10-01 15:02:47
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-10-01 14:50:08
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-09-30 09:23:38
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-09-29 19:02:31
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-09-29 18:11:47
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-09-29 18:10:35
User: Editor/Owner	ID: georgiouion@foothill.edu	Modified: 2010-09-29 18:07:54

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

**Last updated:** 2010-10-11 21:19:56

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