

**MATH 281 – Introduction to Statistics**  
**3 Credit Hours**  
**Black Hills State University**  
**Spring 2008**

- I. Times and Locations:** Section 1, MWF 9:00 – 9:50 am, BJS 168 – Dr. Nag  
 Section 2, MWF 10:00 – 10:50 am, BJS 306 – Dr. Nag  
 Section 3, TTH 9:30 – 10:45 am, BJA 306 – Dr. Siewert  
 Section 4, TTH 3:30 – 4:45 pm, BJA 306 – Dr. Siewert

**II. Instructors:**

Daluss J. Siewert, Ph.D. Office: J163 Office Hours: WF 2:00 – 3:00 pm TTH 11:30 – 12:30 pm (In addition, office visits by appointment are encouraged.) Office Phone: 642-6209 Email: <a href="mailto:dsiewert@bhsu.edu">dsiewert@bhsu.edu</a>	Parthasarathi Nag, Ph.D. Office: SW 209 Office Hours: Mon. 1:00 – 2:00 pm Tues. 1:00 – 2:00 pm Wed: 1:00 – 2:00 pm Thurs. 1:00 – 2:00 pm (In addition, office visits by appointment are encouraged.) Office Phone: 642.6507 Email: <a href="mailto:pnag@bhsu.edu">pnag@bhsu.edu</a>
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- III. Catalog Description:** A study of descriptive statistics including graphs, measures of central tendency and variability and an introduction to probability theory, sampling and techniques of statistical inference with an emphasis on statistical applications.

- IV. Course Prerequisite:** MATH 102 OR MATH 115 OR appropriate mathematics placement.

The prerequisite course(s) for this course satisfy the following Board of Regents System General Education requirement.

*Goal #5:* Students will understand and apply fundamental mathematical processes and reasoning.

*Student Learning Outcomes:* As a result of taking the prerequisite course(s) or by being placed into this course, students will have:

1. Used mathematical symbols and mathematical structure to model and solve real world problems.
2. Demonstrated appropriate communication skills related to mathematical terms and concepts.
3. Demonstrated the correct use of quantifiable measurements of real world situations.

- V. Instructional Methods:** Lectures and class discussions. In addition, online supplements may be used.

## **VI. Course Requirements:**

*Required Textbook:* Mario F. Triola, *Essentials of Statistics*, 3<sup>rd</sup> edition, Addison Wesley, 2008. In addition, your instructor may require you to purchase one-semester access to MathXL.

*Attendance Policy:* By university policy, enrollment in a class implies the responsibility for attending each class session. Students will be allowed to make up graded work if an absence is due to participation in university-sponsored activities, provided prior notification of the impending absence has been given to the instructor.

*Cheating and Plagiarism Policy:* In this course you are expected to perform to the utmost of your abilities in an honest and sincere manner. Cheating and plagiarism will not be tolerated. Academic misconduct will be dealt with per BOR regulations.

*Make-Up Policy:* Except in the case of a documented emergency, or the absence caused by a university sponsored activity, **NO MAKEUP TESTS OR QUIZZES/HOMEWORKS ARE ALLOWED.** The burden of proof regarding the absence rests with the student. Students that were absent with a documented emergency or university sponsored activity must see the instructor to make arrangements for taking a makeup exam.

*Calculator Policy:* Students must purchase, rent, or borrow a TI-83 or TI-83 Plus graphing calculator. The BHSU Math Club rents calculators each semester; for further information go to:

<http://newton.bhsu.edu/~dsiewert/calculators.htm>

## **VII. Course Goals:**

Students will understand and apply fundamental mathematical processes and reasoning as they apply to introductory probability and statistics.

*Student Learning Outcomes:* As a result of taking this course, students will be able to:

1. To understand graphical and numerical means of describing data, the importance of the use of probability methods in data collection, the meaning of random variability, the processes of statistical estimation and hypothesis testing. Assessment will be through examinations, quizzes and group activities in class.
2. To use computing technology (graphing calculator, statistical software) in manipulating data and interpreting data. Assessment will be through examinations, quizzes and group activities in class.
3. To understand the ubiquity of statistical applications in our society. Assessment will be through class discussion.

## VIII. Student Evaluation Procedures:

Final grades will be based on the results of two unit examinations, a comprehensive final examination, and a remaining 15% component decided upon by each individual instructor.

Grading will be by letter grades according to the following percentages:

90 -- 100 => A; 80 -- 89 => B; 70 -- 79 => C; 60 -- 69 => D; less than 59 => F.

**Unit Exams:** Each unit exam will account for 25% of the final grade. These exams will be closed book.

**Final Exam:** A comprehensive final examination will account for 35% of the final grade.

Check the web page or ask your instructor for the tentative dates of the exams.

**IX. ADA Statement:** Reasonable accommodations, as arranged through the Disabilities Services Coordinator, will be provided students with documented disabilities. Contact the BHSU Disabilities Services Coordinator at 642-6099 (room 022 in the Student Union) for more information.

**X. Academic Freedom and Responsibility:** Under Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact the chair of the department in which the course is being taught to initiate a review of the evaluation.

## XI. Tentative Course Outline/Schedule

Week 1	Types of data. Critical Thinking. Design of Experiments.
Week 2	Frequency distributions. Measures of center. Measures of variation.
Week 3	Measures of relative standing. Exploratory data analysis.
Week 4	Introduction to probability.
Week 5	Random variables. Probability distributions.
Week 6	Binomial probability distributions. Exam 1.
Week 7	Normal distribution. Sampling distributions.
Week 8	Central Limit Theorem. Normal as approximation to binomial.
Week 9	Estimating a population proportion. Estimating a population mean.
Week 10	Hypothesis testing. Testing a claim about a proportion.
Week 11	Testing a claim about a mean. Exam 2.
Week 12	Inferences about two proportions and means.
Week 13	Inferences from matched pairs. Correlation and regression
Week 14	Tests for Goodness-of-Fit. Tests for independence.
Week 15	Analysis of variance.

(Please see web page for more detailed schedule and/or suggested homework.)