Eastern Illinois University
BUS 2810, Business Statistics I

Course Number: BUS 2810

Course Name: Business Statistics I

Catalog Description: A study of statistical analysis with business applications, including descriptive statistics, probability, interval estimation, hypothesis tests of means and proportions, simple correlation, chi square, one-way analysis of variation and linear regressions. Includes use of spreadsheet software. BUS 1950 is the required prerequisite for non-AET majors. BUS 901

Credit Hours: (3-0-3)

Prerequisites: BUS 1950 with C or better, or AET major with AET 1323, or permission of the Associate Chair, School of Business.

Semester: Fall, Spring


Class Meetings: Three 50 minute sessions per week for 15 weeks; or Two 75 minute sessions per week for 15 weeks.

Delivery Mode: Traditional face-to-face delivery

Teaching Method: Lecture-problem solving-discussion.

Course Objectives: Through successful completion of the course students will be able to:

1. Understand various statistical topics, such as frequency distribution, estimation, hypothesis testing, and regression analysis.

2. Understand elementary probability theory including discrete and continuous probability distributions.

3. Provide the student the experience and opportunity to apply various statistical methods and probability concepts to actual business and economic problems.

4. Use statistical software to automate solving business problems.

5. Apply statistical technique to assist in making decisions.

6. To prepare the student with a set of skills that can be applied to later courses in the School of Business as well as his/her career and personal life.

Evaluation Methods: Quizzes, Homework assignments, Case analyses and/or projects, Exams.
## Course Outline:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Class Hours</th>
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<tbody>
<tr>
<td>Statistics Overview</td>
<td>0.75</td>
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<tr>
<td>Introduction to Statistics and Data Collection--- Questionnaire design, random sampling, use of random number table, data preparation.</td>
<td>2.50</td>
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<tr>
<td>Data Presentation—Ordered array, frequency, relative and percentage distributions, histograms and polygons, cumulative distributions and polygons, digidot plot.</td>
<td>2.50</td>
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<tr>
<td>Describing and Summarizing Data—Measures of central tendency, dispersion, shape, population data, empirical rule.</td>
<td>2.50</td>
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<tr>
<td>Basic Probability—marginal, joint, conditional probabilities, addition and multiplication rules, Bayes’ Theorem, counting rules, ethical issues and probability.</td>
<td>2.50</td>
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<td>Discrete Probability Distributions—mathematical expectation, expected Monetary value, binomial and poisson distributions</td>
<td>2.50</td>
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<td>Continuous Probability Distributions—Normal distribution, Approximating the Binomial and Poisson distributions.</td>
<td>3.50</td>
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<tr>
<td>Sampling Distributions—sampling distributions of means, proportions, Sampling from finite populations.</td>
<td>2.50</td>
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<td>Estimation—Confidence interval estimation for means and proportions, Student’s t distribution, prediction interval, sample size determination</td>
<td>3.75</td>
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<tr>
<td>Hypothesis Testing—One-sample and two-sample mean and proportion hypothesis tests, p value approach to hypothesis testing, One-way ANOVA F Test, Chi-square test for differences.</td>
<td>8.25</td>
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<tr>
<td>Statistical Applications in Quality and Productivity Management—control Charts: p, np, c, mean (X-Bar) and range (R-Bar).</td>
<td>2.50</td>
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<tr>
<td>Simple Linear Regression—including standard error of the estimate, measures of variation in regression and correlation, prediction interval, hypothesis test of the slope.</td>
<td>3.75</td>
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Total: 37.5 hours + 2.5 for examinations = 40 hours

**Ethical issues**

**Technological Issues**

**International Issues**
BUSINESS PERSPECTIVES AND SKILLS

1. Upon completion of a program in the School of Business, students should understand the perspectives that form the context of business. To help students develop that understanding, this course includes coverage of the following issues:

   Ethical issues: Ethical issues and how they relate to: data collection, describing and summarizing data, and data presentation. (approximately 1 hour)

   Technological Issues: Spreadsheet and/or statistical analysis computer software will be used to display data, summarize data, use discrete and continuous distributions, perform hypothesis testing, and run regressions (approximately 2 hours).

   International Issues: International issues and how they relate to data collection will be covered (approximately 15 minutes).

Coverage of these topics is shown on the class schedule.

2. Integrated throughout the business courses are assignments and activities designed to help students develop and strength certain skills required in all areas of business. This course includes the following activities:

   Oral communication skills: All students are expected to participate regularly in class discussion and various class activities.

   Written communication skills: Homework assignments and other class activities will require demonstration of the students’ written communication skills.

   Decision-making skills: The course—through problems—focuses on analytical skills including: recognizing operational problems and issues, identifying appropriate statistical tools for resolution, utilizing those tools, reaching and presenting appropriate solutions.

   Research skills (using library or information technology resources): Some research at Booth Library and/or the Internet may be required on homework assignments and other class activities.

CLASS POLICIES

Students with Disabilities: Appropriate academic support is available for students with a documented disability. Please notify the instructor and contact the Office of Disability Services (581-6583) for further information.

Class Attendance and Excused Absences: In accordance with University policy, students are expected to attend class unless prevented by illness, an official University activity, or an emergency. Students who miss class due to an excused absence will be allowed to make up missed work without penalty. An absence from class will be considered an “excused absence” under the following circumstances:

• Absence due to an official University activity. Absence due to an official University activity is an excused absence only if the student notifies the
professor of the absence in advance and provides written documentation of the University activity from an appropriate University representative prior to the absence.

- **Absence due to emergency.** Evaluation of whether an absence due to an emergency is an excused absence will be made by the professor on a case by case basis. At minimum, the student should notify the professor as soon as possible and should provide documentation of the emergency.

- **Absence due to illness.** Absences due to illness is an excused absence only if the students notifies the professor of the absence in advance (i.e. prior to the missed class) and provides documentation of the illness upon return to class.

**Academic Integrity:** All students are expected to comply with University rules and regulations on academic integrity and honesty. These rules and regulations are summarized in the Student Conduct Code (Article Q. Academic Dishonesty), in “A Student Guide to Academic Integrity,” which is posted in the classroom, and at page 45 of the Undergraduate Catalog. Disciplinary sanctions may be imposed for violations of these rules and regulations.