

# INTRODUCTION TO PROBABILITY AND STATISTICS

## MATH 1530

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### 1.0 Course Objectives

- 1.1 **Overview of Content and Purpose:** (3 hours) An Elementary introduction to the basis concepts of probability theory and statistical inference (as applied to the binomial and normal distribution) including point estimation, confidence intervals, and hypothesis testing.
- 1.2 **For Whom Intended:** Non-mathematicians desiring an introduction to the concepts and philosophy underlying statistical techniques.
- 1.3 **Prerequisites:** One year of high school algebra or successful placement on MPE.
- 1.4 **Unusual Circumstances:** None

### 2.0 Objectives

- 2.1 **Performance Objectives for the Students:** To give the student an introduction to some techniques widely used in quantitative research and applications of these techniques to simple problems from a variety of disciplines.

### 3.0 Content and Organization

- 3.1 **Topics:**
- 1) Review of basic algebra needed in elementary probability and statistics.
  - 2) Counting methods-permutations and combinations.
  - 3) Probability models for discrete random variables.
  - 4) Statistical Inference applied to the binomial probability distribution.
  - 5) Probability models for continuous random variables.
  - 6) Statistical inference applied to the normal distribution.
  - 7) Readings about a variety of statistical problems.

### 4.0 Teaching Methodology

- 4.1 **Methods to be Used:** The course will be conducted primarily by lecture with student participation and discussion encouraged. Elementary problems and readings from a variety of disciplines will illustrate the use of statistics in quantitative analysis.

### 5.0 Evaluation

- 5.1 **Basis for Evaluating Student Performance:** The grade for the course will be based upon at least three examinations given in class with possible appropriate projects to be completed outside the classroom.

### 6.0 Resource Material

- 6.1 **Textbook(s) or Other Required Readings:** Larson, Elementary Statistics, 1<sup>st</sup>, ISBN 0-13-148317-X, Prentice Hall Publishers
- 6.2 **Current Bibliography of Resources:** Freud, J.E., Statistics, A First Course, Prentice-Hall, 1970  
Hoel, P.G., Elementary Statistics, John Wiley and Sons, 1971.  
Johnson, Statistics-Principles and Methods, third edition, John Wiley & Sons