

CENTRAL MICHIGAN UNIVERSITY  
COLLEGE OF SCIENCE AND TECHNOLOGY  
**COURSE SYLLABUS**

<b><u>STA 382</u></b>	<b><u>Elementary Statistical Analysis</u></b>	<b><u>3(3-0)</u></b>	
Desig. No.	Title		Credit/Mode

**I. Bulletin Description:**

An introduction to statistical analysis. Topics will include descriptive statistics, probability, sampling distributions, statistical inference, and regression. Greater emphasis than STA 282 will be placed on probability theory and probability distribution. Credit may not be earned in both STA 282 and STA 382.

**II. Prerequisites:**

MTH 130

**III. Rationale for Course Level:**

**IV. Textbooks and Other Materials to be Furnished by the Student:**

Larson and Marx, Statistics, Prentice Hall, 1990.

**V. Special Requirements of the Course:**

Scientific Calculator.

**VI. General Methodology Used in Conducting the Course:**

Lecture, problem solving, and discussion.

## VII. Course Objectives:

1. To acquaint the student with the principles and the methodology of statistical inference.
2. To enable the student to recognize statistical problems and the necessity of professional consultation.
3. To enable the student to read and understand published statistical research.
4. To interest students in studying further in the field of statistics.

## VIII. Course Outline:

1. Introduction, Descriptive Statistics, and Probability 4 weeks
  - a. Objectives and definitions of statistics.
  - b. Measures of central tendency and graphical methods.
  - c. Sample of space and vents
  - d. Probability of an event.
  - e. Counting rules.
  - f. Probability rules
  - g. Bayes' Rule.
2. Random Variables, Probability Distribution 4 weeks
  - a. Definitions.
  - b. Expectation and variance
  - c. Binomial distribution.
  - d. Other discrete probability distributions.
  - e. Continuous probability distributions.
  - f. Uniform, normal distributions.
3. Estimation and Testing Hypothesis for Binomial Parameter and Normal Probability Distribution 4 weeks
  - a. Null and alternative hypothesis.
  - b. Types of errors.
  - c. Power functions.
  - d. Steps in testing hypotheses
  - e. Normal approximation to binomial.
  - f. Distribution of sample means.
  - g. Sampling distributions and random samples
4. Statistical Inference, Regression, and Correlation 4 weeks
  - a. Point and interval estimates.
  - b. Small sample inference – “t” distribution.
  - c. Sample size.

- d. Two population inference.
  - 1.  $u_1 - u_2$
  - 2.  $p_1 - p_2$
- e. Linear regression model.
- f. Inference for regression model.
- g. Correlation.

**IX. Evaluation:**

Four tests and graded homework. A test approximately every four weeks..

**X. Bibliography:**

Devore, J.L., Probability and Statistics for Engineering and the Sciences, Brooks And Cole, 3<sup>rd</sup> edition, 1991.

Hogg, R.V., Ledolter, J., Applied Statistics for Engineers and Physical Scientists, MacMillan, 2<sup>nd</sup>. Edition, 1992.

Larson, R.I., Marx, M.L., Statistics, Prentice Hall, 1990.

Mendenhall, W., Sincich, T., Statistics for Engineering and the Sciences, 3<sup>rd</sup>. edition, 1991.

Netter. J. Wassermanm. W., Whitmore, G., Applied Statistics, Allyn & Bacon, 4<sup>th</sup> Edition, 1993.

Rustage, J.S., Introduction to Statistical Methods, Rowman & Allanheld, Volume 1, 1984

Snedecor, G.W., Cochran, W.G., Statistical Methods, Iowa State University Press, 7<sup>th</sup> edition, 1978.

Walpole, R.E., Myers, R.H., Probability and Statistics for Engineers and Scientists, MacMillan, 4<sup>th</sup> edition, 1989.

Syllabus prepared by: Carl Lee

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Signature

September 11,  
1998  
Date

STA382