

**STAT151**  
**Introduction to Applied Statistics I**  
**3 Credits**

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# STAT151 Version: 10



## Introduction to Applied Statistics I

### Calendar Description

Data collection and presentation, descriptive statistics. Probability distributions, sampling distributions and the central limit theorem. Point estimation and hypothesis testing. Correlation and regression analysis. Goodness of fit and contingency table.

### Rationale

Statistical literacy is indispensable to making intelligent decisions in this day-and-age when the average citizen is bombarded by a huge quantity of numbers and figures in advertisements and commercials, many of which may be presented in a highly misleading manner. A sound understanding of the principles covered in this course enables the student to apply statistical reasoning to evaluate and interpret the barrage of statistical data encountered in every walk of life. Furthermore, statistical methodology has become a standard analysis tool in the natural sciences and engineering. Statistical techniques are also employed regularly in many other fields such as medicine, pharmacology, education, economics, political science, agriculture, and natural resource management. Therefore this course provides the student with basic statistical knowledge and skills necessary for pursuing studies in a variety of disciplines.

### Prerequisites

Pure MATH 30 or Math 30-1. Math 30-2 recommended.

### Co-Requisites

None

### Course Learning Outcomes

Upon successful completion of this course, students will be able to

1. analyze and interpret basic statistical data.
2. apply basic concepts of probability.
3. develop a working familiarity with various probability distributions, especially the normal distribution.
4. apply basic techniques of statistical inference.

## Resource Materials

### *Required Texts*

Agresti, Franklin, Klingenber, and Michael Posner. *Statistics: The Art and Science of Learning from Data*. 4th ed. New Jersey, Pearson, 2016. Print. ISBN: 9780134435855.

### *Required Calculator*

A hand calculator that does statistical calculations, including linear regression. NOTE: Programmable hand calculators are not allowed in examinations.

### *Reference Text(s)/Handouts/Reading/Lab Manual*

As assigned by the instructor.

## Conduct of Course

**This is a 3 credit course with 3 hours of lecture and 1.5 hours of laboratory per week. (3-0-1.5)**

Material for this course is presented during the lectures. Questions are assigned from lecture material.

Lab time is used to complete assigned labs using computer statistical software.

Students must complete assignments and labs to successfully learn all course material. **No late assignments or labs are marked for evaluation.**

## Evaluation Procedures

Grades are determined in the following manner:

|              |            |
|--------------|------------|
| Assignments  | 10%        |
| Labs         | 10%        |
| Term Exam I  | 15%        |
| Term Exam II | 20%        |
| Lab Exam     | 10%        |
| Final Exam   | <u>35%</u> |
| Total        | 100%       |

**No supplemental assignments or examination re-writes are permitted in this course.**

At term end, there is a record of each student's raw grades for all assignments and exams. A term summary mark based on these raw grades is computed and these marks are placed on the "marking strip" as indicated.

## Grade Equivalents and Course Pass Requirements

*A minimum grade of D (50%) (1.00) is required to pass this course.*

|               |      |       |       |       |       |       |       |       |       |       |       |        |
|---------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Letter        | F    | D     | D+    | C-    | C     | C+    | B-    | B     | B+    | A-    | A     | A+     |
| Percent Range | 0-49 | 50-52 | 53-56 | 57-59 | 60-64 | 65-69 | 70-74 | 75-79 | 80-84 | 85-89 | 90-94 | 95-100 |
| Points        | 0.00 | 1.00  | 1.30  | 1.70  | 2.00  | 2.30  | 2.70  | 3.00  | 3.30  | 3.70  | 4.00  | 4.00   |

**Students must maintain a cumulative grade of C (GPA - Grade Point Average of 2.00) in order to qualify to graduate.**

## Attendance

Regular attendance is essential for success in any course. Absence for any reason does not relieve a student of the responsibility of completing course work and assignments to the satisfaction of the instructor. Poor attendance may result in the termination of a student from the course.

If you do not meet the established attendance requirements, your instructor will recommend that the Registrar withdraw you from the course. A failing grade of RW (Required to Withdraw) will appear on your transcript.

In cases of repeated absences due to illness, the student may be requested to submit a medical certificate.

*Instructors have the authority to require attendance at classes.*

## Course Units/Topics

- I. Exploring Data
  1. Picturing Distributions with Graphs
  2. Describing Distributions with Numbers
  3. The Normal Distributions
  4. Scatterplots and Correlation
  5. Regression

II. Inference

1. Producing Data: Sampling
2. Producing Data: Experiments
3. Introducing Probability
4. Sampling Distributions
5. Confidence Intervals: The Basics
6. Tests of Significance: The Basics
7. Inference in Practice

III. Inference About Variables

1. Inference About a Population Mean
2. Two-Sample Problems
3. Inference About a Population Proportion

IV. Inference About Relationships

1. One-Way Analysis of Variance: Comparing Several Means
2. Two Categorical Variables: The Chi-Square Test



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