

# Course Syllabus

## Course Description

MATH 11: Topics include descriptive measures, probability and sampling distributions, central limit theorem, one and two sample hypothesis tests, analysis of variance, predictive techniques, correlation and regression

## Textbook

Title: Essentials of Statistics, Author: Triola, ISBN:9780136803102

## Expected Learning Outcomes

*Upon completion of this course, students will be able to:*

1. Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by using tables, graphs, measures of central tendency, and measures of dispersion.
2. Apply concepts and terminology of statistics.
3. Implement the rules of probability.
4. Collect data, interpret and communicate the results using statistical analyses such as confidence intervals, hypothesis tests, and regression analysis.

## Course Objectives

In the process of completing this course, students will:

1. Distinguish among different scales of measurement and their implications;
2. Identify the standard methods of obtaining data and identify advantages and disadvantages of each;
3. Interpret data displayed in tables and graphically;
4. Calculate measures of central tendency and variation for a given data set;
5. Apply concepts of sample space and probability;
6. Calculate the mean and variance of a discrete distribution;
7. Calculate probabilities using normal and t-distributions;
8. Distinguish the difference between sample and population distributions and analyze the role played by the Central Limit Theorem;

9. Construct and interpret confidence intervals;
10. Determine and interpret levels of statistical significance including p-values;
11. Interpret the output of a technology-based statistical analysis;
12. Identify the basic concept of hypothesis testing including Type I and II errors;
13. Formulate hypothesis tests involving samples from one and two populations;
14. Select the appropriate technique for testing a hypothesis and interpret the result;
15. Use linear regression and ANOVA analysis for estimation and inference, and interpret the associated statistics; and
16. Use appropriate statistical techniques to analyze and interpret applications based on data from disciplines including business, social sciences, psychology, life science, health science, and education.

### **Course Outline**

- Intro to Probability and Statistics
  - Frequency Distributions
  - Graphs
  - Data Description
- Probability and Counting Rules
  - Sample Spaces
  - Simple and compound events
- Discrete Distributions
  - Binomial Distribution
- Normal Distribution
  - Applications
  - Central Limit Theorem
- Confidence Intervals
- Hypothesis Testing
  - z test
  - t test
  - difference between two means
  - difference between two proportions
- Contingency Tables
  - Analysis of variance

### **Grading**

Grading will consist of the traditional grading scale: 100%-90% A, 89.99%-80% B, and so on. The grading breakdown of the final grade is as follows:

|          |       |
|----------|-------|
| Project  | - 20% |
| Homework | - 35% |
| Exams    | - 45% |

## **Homework**

Homework is to practice the concepts that we learn in class, homework will be given regularly and always due the next class period.

## **Other Expectations**

As a student it is expected that you will act in a professional and respectful manner to all persons and property while on campus. Any student that is consistently disrupting classes or other students can be asked to leave class for the duration of that class as well as the following class session. This includes disruptions caused by personal electronics. If a disruption occurs during class, the student will be asked to leave class for the day. No visitors will be allowed to class, by law, the only persons allowed to sit in the class are enrolled students.

## **Academic Honesty**

Cheating, plagiarism, and other forms of academic dishonesty are unacceptable at the Willow International Center. You may work together in groups on homework and projects, but each member must make a meaningful contribution. The work you turn in must be your own. All work on exams must be your own work. In the event of academic dishonesty, a "0" will be given and you will be subject to other disciplinary actions as described in the course catalog.

## **Access Services**

If you have a verified need for an academic accommodation or materials in alternate media (i.e.: Braille, large print, electronic text, etc.) per the American with Disabilities Act or Section 504 of the Rehabilitation act please contact your instructor as soon as possible.

## **Syllabus Disclaimer**

The instructor views the course syllabus as an educational contract between the instructor and students. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes to the syllabus as deemed necessary. Students will be notified in a timely manner of any syllabus changes via email or announcement.