

**HOSTOS COMMUNITY COLLEGE  
DEPARTMENT OF MATHEMATICS**

<b>MAT 120:</b>	<b>Introduction to Probability and Statistics</b>
<b>CREDIT HOURS:</b>	<b>3.0</b>
<b>EQUATED HOURS:</b>	<b>3.0</b>
<b>CLASS HOURS:</b>	<b>4.5</b>
<b>PREREQUISITES:</b>	<b>Passing score on the COMPASS/CMAT</b>
<b>REQUIRED TEXTS BOOKS:</b>	<b>Triola, M. <u>Essentials of Statistics</u>, 4<sup>th</sup> Edition, Pearson-Addison Wesley, C2007.</b> <b>Menil, V. Galiana, A. and Wei, S. <u>Essentials of Statistics Study Guide</u>, 2<sup>nd</sup> Edition Pearson Custom Publishing, C2009.</b>
<b>DESCRIPTION:</b>	<b>The student will explore, describe, and compare data by measures of central tendency and dispersion from selected sample data sets. Using the sample statistics, the student will be able to make a statement about the population parameters by confidence-level and hypothesis testing methods. The student will also solve problems involving probabilities and their distributions. Other topics such as correlation, regression, chi-square and analysis of variance will also be covered.</b>
<b>EXAMINATIONS:</b>	<b>A minimum of four partial tests and a comprehensive final examination.</b>
<b>GRADES:</b>	<b>A, A<sup>-</sup>, B<sup>+</sup>, B, B<sup>-</sup>, C<sup>+</sup>, C, D, I, F</b>

**MATH 120  
COURSE OUTLINE**

**I. Introduction: to Statistics**

- **Definitions and explanations of basic terms**
- **Levels of Measurement**
- **Design of Experiments**
- **Sampling Techniques**

**II. Summarizing and graphing Data**

- **Frequency Distributions**
- **Histograms**
- **Statistical graphics**

**III. Describing, Exploring and Comparing Data**

- **Exploratory Data Analysis (EDA)**
- **Measures of Central Tendency**
- **Measures of Dispersion/Variability**
- **Applications**

**IV Probability**

**The Probability Function**

**Probability Law**

- a. **Addition Law**
- b. **Multiplication Law**
- c. **Conditional Probability**

**Applications**

**V. Discrete Probability Distribution**

- **Mean and Variance of a Probability Distribution**
- **The Binomial Probability Distribution**
- **Applications**

**VI. Normal Probability Distribution**

- **The standard normal distribution**
- **Standard Score**
- **Sampling Distributions and Estimators**
- **Applications**

## **VII Estimates and Sample Sizes**

- **Margin of Error**
- **Sample Size**
- **Estimating population proportion**
- **Estimating population mean when  $\sigma$  is Known**
- **Estimating population mean when  $\sigma$  is not known**
- **Estimating population variance**
- **Application**

## **VIII. Hypothesis Testing**

- a. **Hypothesis test on proportion**
- b. **Hypothesis test on means**
- c. **Hypothesis test on standard deviation**
- d. **Applications**

## **IX Inferences from two samples**

- **Two sample test on proportions**
- **Two sample test on means**
- **Two sample test on standard deviation**
- **Applications**

## **X. Correlation and Regression**

- **Linear Correlation**
- **Correlation Coefficient**
- **Testing the significance of the correlation coefficient**
- **Regression Equation/Predicting Equation**
- **Regression coefficient**
- **Testing the significance of the regression coefficient**
- **Applications**

## **XI. Chi-Square and Analysis of Variance (ANOVA)**

- **Chi-Square test for Goodness of fit test**
- **Chi-Square test for Independence**
- **One-way Analysis of Variance (ANOVA)**
- **Applications**