**DEPARTMENT OF MATH**

# MATH 1342 − Statistic

***Instructor***: Fred Khoury

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***Conference* Hours**:

* **PREREQUISITE**

A grade of “C” or better in MATH−1314 (College Algebra)

* **COURSE DESCRIPTION**

This is an introduction to the use of statistics in business and computer science. Topics include descriptive statistics, probability distributions, estimation and statistical tests, and analysis of variance (ANOVA). Additional topics selected from regression correlation, and non-parametric statistical methods will be reviewed.

* **STUDENT LEARNING OUTCOMES**

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

1. Summarize and interpret sets of qualitative and quantitative data.
2. Compute and interpret descriptive statistics on data sets.
3. Use the basic rules of probability to compute the probability of an event.
4. Compute and interpret the expected value and variance of a random variable.
5. Use the binomial probability function and the binomial tables to obtain probabilities.
6. Use the standard normal probability distribution to compute probabilities.
7. Construct and interpret an interval estimate of a parameter.

* **WITHDRAWAL POLICY**

***Students wishing to drop courses must drop themselves over the web***. ***Faculty will not drop students***. Students should consult with a Counselor/Advisor before dropping courses. Students starting college for the first time in fall 2007 or after may only receive ***six grades of W*** (grade received from a course dropped after the census date) from all Texas public colleges and universities attended. Grades of *W* in developmental courses or courses taken while in high school will not count in the six grades of *W*.

* **GRADE RANGE** 90 – 100 A

80 – 89 B

70 – 79 C

60 – 69 D

Below 60 F

* **GRADING:** The final class average will be determined by the following guidelines:

Quizzes 10 %

4 major exams 60 %

Comprehensive semester examination 30 %

* **DISABLITY STATEMENT**

If you have a disability that may affect your ability to learn the material in this course. Students should inform their instructor of any special need(s) as soon as possible to ensure that such needs are met in a timely manner.

* **TEXTBOOKS/MATERIALS:**

***Optional***: Hardcopy of the Text.

**MATH 1342** – ***Statistic***

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| ***Sec.*** | ***Topic*** |
| ***Introduction to Statistics*** | |
| 1.1 | Statistical Thinking |
| 1.2 | Type of Data |
| 1.3 | Critical Thinking |
| 1.4 | Collecting Sample Data |
| ***Summarizing and Graphing Data*** | |
| 1.5 | Frequency Distributions |
| 1.6 | Histograms |
| 1.7 | Statistical Graphics |
| 1.8 | Critical Thinking: Bad Graphs |
| ***Statistics for Describing, Exploring, and Comparing Data*** | |
| 1.9 | Measures of Center |
| 1.10 | Measures of Variation |
| 1.11 | Measures of Center |
| ***Exam* 1** | |
| ***Probability*** | |
| 2.1 | Basic Concepts of Probability |
| 2.2 | Addition Rule |
| 2.3 | Multiplication Rule: Basics |
| 2.4 | Multiplication Rule: Complements and Conditional Probability |
| 2.5 | Counting |
| 2.6 | Bayes’ Theorem |
| ***Discrete Probability Distributions*** | |
| 2.7 | Random Variables |
| 2.8 | Binomial Distributions |
| 2.9 | Mean, Variance, and Standard Deviation for the Binomial Distributions |
| ***Normal Probability Distributions*** | |
| 2.10 | Standard Normal Distributions |
| 2.11 | Applications Normal Distributions |
| 2.12 | Sampling Distributions and Estimators |
| 2.13 | Central Limit Theorem |
| 2.14 | Normal Approximations to Binomial |
| 2.15 | Assessing Normality |
| ***Exam* 2** | |
| ***Estimates and Sample Sizes*** | |
| 3.1 | Estimating a Population Proportion |
| 3.2 | Estimating a Population Mean: σ Known |
| 3.3 | Estimating a Population Mean: σ Not Known |
| 3.4 | Estimating a Population Variance |
| ***Hypothesis Testing*** | |
| 3.5 | Basic of Hypothesis Testing |
| 3.6 | Testing a Claim about a Proportion |
| 3.7 | Testing a Claim about a Mean: σ Known |
| 3.8 | Testing a Claim about a Mean: σ Not Known |
| 3.9 | Testing a Claim about Variation |
| ***Inferences from Two Samples*** | |
| 3.10 | Inferences About Two Portions |
| 3.11 | Inferences About Two Means: Independent Samples |
| 3.12 | Inferences from Dependent Samples |
| ***Exam* 3** | |
| ***Correlation and Regression*** | |
| 4.1 | Correlation |
| 4.2 | Regression |
| 4.3 | Variation and Prediction Intervals |
| 4.4 | Rank Correlation |
| ***Chi-Square and Analysis of Variance*** | |
| 4.5 | Goodness−of−Fit |
| 4.6 | Contingency Tables |
| 4.7 | Analysis of Variance |
| ***Exam* 4** | |
| ***Comprehensive Final Exam*** | |

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| ***Sec.*** | ***Topic*** |
| ***Introduction to Statistics*** | |
| 1.1 | An Overview of Statistics |
| 1.2 | Data Classification |
| 1.3 | Data Collection and Experimental Design |
| ***Descriptive Statistics*** | |
| 1.4 | Frequency Distribution and Their Graphs |
| 1.5 | More Graphs and Displays |
| 1.6 | Measures of Central Tendency |
| 1.7 | Measures of Variation |
| 1.8 | Measures of Position |
| ***Probability*** | |
| 1.9 | Basic Concepts of Probability and Counting |
| 1.10 | Conditional Probability and the Multiplication Rule |
| 1.11 | The Addition Rule |
| 1.12 | Additional Topics in Probability and Counting |
|  | ***Exam* 1** |
| ***Discrete Probability Distributions*** | |
| 2.1 | Probability Distributions |
| 2.2 | Binomial Distributions |
| 2.3 | More Discrete Probability Distributions |
| ***Normal Probability Distributions*** | |
| 2.4 | Introduction to Normal Distributions and Standard Normal Distributions |
| 2.5 | Normal Distributions: Finding Probabilities |
| 2.6 | Normal Distributions: Finding Values |
| 2.7 | Sampling Distributions and the Central Limit Theorem |
| 2.8 | Normal Approximations to Binomial Distributions |
| ***Confidence Intervals*** | |
| 2.9 | Confidence intervals for the Mean (Large Samples) |
| 2.10 | Confidence intervals for the Mean (Small Samples) |
| 2.11 | Confidence intervals for Population Proportions |
| 2.12 | Confidence Intervals for Variance and Standard Deviation |
|  | ***Exam* 2** |
| ***Hypothesis Testing With One Sample*** | |
| 3.1 |  |
| 3.2 |  |
| ***Systems to Linear Equations*** | |
| 3.3 |  |
| 3.4 |  |
| 3.5 |  |
| 3.6 |  |
| 3.7 |  |
| 3.8 |  |
| ***Series Solutions to Differential Equations*** | |
| 3.9 |  |
| 3.10 |  |
| 3.11 |  |
| 3.12 |  |
| 3.13 |  |
|  | ***Exam* 3** |