Syllabus – Math 111 (Elementary Statistics and Probability) – FALL 2019.

York Early Academy.

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Course Description

Introduction to probability and statistics, four hours, four credits: Elements of statistics, graphs, frequency distributions, measures of central tendency and measures of dispersion, elementary probability theory, counting, binomial and normal distribution.

Course Description

Math 102 or equivalent

Text: ELEMENTARY STATISTICS by Larson and Farber (Picturing the world), Fifth Edition.

Objectives:

A- To acquaint the student with the fundamental applications of statistics and probability.
B- To learn about experiments, outcomes, probabilities, and odds.
C- To learn about probability distributions, including binomial, normal and sampling distributions.
D- To provide a foundation for the study of more specialized methods.

Course Outline

First Week: CHAPTER 1: section 1.1 – 1.3,

Introduction to statistics

A- Definitions and types of statistics,

B- Population, sample,

C- Types of variables, parameters.

Second Week: CHAPTER 2: Section 2.1 - 2.2

Descriptive statistics:

A- Frequency distribution

B- Graphs and displays histogram, ogive curve.

C- Frequency polygon, pie chart.

D- Stem and Leaf plot.

Week 3 and 4: Section 2.3 - 2.5

A- Measures of central tendency

B- Measures of variation

C- Measures of position:

i) Summation notation

ii) Mean, median, mode range, midrange

iii) Variance and standard deviation

D- Measures for grouped data and other fractiles

E- Empirical rule and Chebyshev's theorem. **(Test 1. TBA)**

Week 5, 6 and 7: Chapter 3: Section 3.1 - 3.4.

Probability Fundamental:

A- Empirical and theoretical probabilities.

B- Sample space, events and complement.

C- Addition rule:

i) Mutually and non-mutually exclusive events.

D- Multiplication rule:

i) Conditional probabilities (dependent and independent events and counting).

Week 8: Chapter 4: section 4.1 – 4.3

Discrete Probability Distributions:

A- Random variables

B- Binomial probability distributions

C- Mean, variance and standard deviation for all probability distribution. **(Test 2, TBA)**

Week 9 and 10: Chapter 5 : section 5.1 – 5.5

Normal probability Distributions:

A- The standard Normal distribution and applications

B- Sampling distributions and estimators

C- The central limit theorem and normal as an approximation to the binomial distribution.

Week 11, 12 and 13: chapter 6: section 6.1 – 6.4

A- Confidence intervals for the mean (large and small sample)

B- Population Proportions, variation and standard deviation.

C- Estimating a population mean:

i) Standard deviation known and unknown

ii) Population proportion

D- Estimating a population variance:

i) Sampling distribution

ii) Applying central theorem

iii) Confidence intervals

iv) Sampling size, student t- scores and chi squared. **(Test 3.???, TBA).**

Week 14: Review for the final exam **(Final exam, TBA)**

GRADES POLICY

Final grade will base on two or three midterms, homework, and the final exam.

1) **Midterm 1: → 25 %**
2) **Midterm 2: → 25 %**
3) **Homework: → 10 %**
4) **Final exam: → 40 %**

Grade Equivalency table

Grade Range	Grade	Grade Range	Grade
97 ≤ X ≤ 100	**A+**	**77 ≤ X ≤ 79.9**	**C+**
93 ≤ X ≤ 96.9	**A**	**73 ≤ X ≤ 76.9**	**C**
90 ≤ X ≤ 92.9	**A-**	**70 ≤ X ≤ 72.9**	**C-**
87 ≤ X ≤ 89.9	**B+**	**67 ≤ X ≤ 69.9**	**D+**
83 ≤ X ≤ 86.9	**B**	**60 ≤ X ≤ 66.9**	**D**
80 ≤ X ≤ 82.9	**B-**	**0 ≤ X ≤ 59.9**	**F**