

Effective Fall 2011

DIVISION OF NATURAL SCIENCES AND MATHEMATICS

TIDEWATER COMMUNITY COLLEGE

VIRGINIA BEACH CAMPUS

COURSE PLAN

Course Number and Title: MTH 157 – ELEMENTARY STATISTICS

Lecture Hours: 3

Lab Hours: 0

Credit Hours: 3

Submitted by: Judy Williams

Date: 7/4/2011

Approved by: C. Newsom, M. Kirby
Assistants to the Dean

Date: _____

Greg Frank
Academic Dean

Date: _____

I. COURSE DESCRIPTION

This course presents elementary statistical methods and concepts including descriptive statistics, estimation, hypothesis testing, linear regression, and categorical data analysis.

II. PREREQUISITES:

Successful completion of MTH 152 or MTH 158 or satisfactory score on placement test.

III. INTRODUCTION:

This course is designed to provide students with a basic understanding of statistics. They should become statistically literate citizens as well as learn the statistical procedures necessary for their academic programs.

IV. INSTRUCTIONAL MATERIALS:

Textbook: Fundamentals of Statistics, by Michael Sullivan III, Prentice Hall, 2011, 3rd edition;
 ISBN 0-321-705882 (3 hole punch package with MyMathLab);
 ISBN 0-321-744411 (Hardbound package with MyMathLab); or
 ISBN 0-321-19991-X (Student Access Kit with online textbook only)
 Prentice Hall **REQUIRED**

Scientific or graphing calculator

REQUIRED

NOTE: Students with the e-book through MyMathLab are not required to have a printed book.

V. MATERIAL TO BE COVERED:

Unit I	Chapters 1, 2, 3, 4, and 5 ALL SECTIONS	7	weeks
Unit II	Chapter 6, and 7 ALL SECTIONS	2	weeks
Unit III	Chapter 8, and 9 ALL SECTIONS	3	weeks
Unit IV	Chapter 10, sections 10.1-10.4	1.5	weeks
Unit V	Chapter 12, sections 12.1 and 12.2	1.5	weeks

VI. BASIC CONCEPTS**Chapter 1: Data Collection**

- 1.1 Introduction to the Practice of Statistics
- 1.2 Observational Studies versus Designed Experiments
- 1.3 Simple Random Sampling
- 1.4 Other Effective Sampling Methods
- 1.5 Bias in Sampling
- 1.6 The Design of Experiments

Chapter 2: Organizing and Summarizing Data

- 2.1 Organizing Qualitative Data
- 2.2 Organizing Quantitative Data: The Popular Displays
- 2.3 Graphical Misrepresentations of Data

Chapter 3: Numerically Summarizing Data

- 3.1 Measures of Central Tendency

- 3.2 Measure of Dispersion
- 3.3 Measure of Central Tendency and dispersion from Grouped Data
- 3.4 Measures of Position and Outliers
- 3.5 The Five Number Summary and Boxplots

Chapter 4: Describing The Relation Between Two Variables

- 4.1 Scatter Diagrams and Correlation
- 4.2 Least-Squares Regression
- 4.3 The Coefficient of Determination

Chapter 5: Probability

- 5.1 Probability Rules
- 5.2 The Addition rule and Complements
- 5.3 Independence and the Multiplication Rule
- 5.4 OMIT
- 5.5 OMIT
- 5.6 OMIT

Chapter 6: Discrete Probability Distributions

- 6.1 Discrete Random Variables
- 6.2 The Binomial Probability Distribution

Chapter 7: The Normal Probability Distribution

- 7.1 Properties of the Normal Distribution
- 7.2 The Standard Normal Distribution
- 7.3 Applications of the Normal Distribution
- 7.4 Assessing Normality
- 7.5 The Normal Approximation to the Binomial Probability Distribution

Chapter 8: Sampling Distributions

- 8.1 Distribution of the Sample Mean
- 8.2 Distribution of the Sample Proportion

Chapter 9: Estimating the Value of a Parameter Using Confidence

- 9.1 The Logic in Constructing Confidence Intervals for a Population Mean when the Population Standard Deviation is Known
- 9.2 Confidence Intervals for a Population Mean When the Population Standard Deviation is Unknown
- 9.3 Confidence Intervals for a Population Proportion
- 9.4 Putting it together: Which Procedure do I use?

Chapter 10: Hypothesis Tests Regarding a Parameter

- 10.1 The Language of Hypothesis Testing
- 10.2 Hypothesis Tests for a Population Mean—Population Standard Deviation
- 10.3 Hypothesis Tests for a Population Mean—Population Standard Deviation Unknown
- 10.4 Hypothesis Tests for a Population Proportion
- 10.5 OMIT

Chapter 12: Additional Inferential Procedures

- 12.1 Goodness of Fit Test
- 12.2 Test for Independence and the Homogeneity of

VII. SUGGESTED WEEKLY SCHEDULE – 16 WEEK SEMESTER:

- Week 1: 1.1 – 1.6
- Week 2: 2.1 – 2.3, 3.1 – 3.2
- Week 3: 3.3 – 3.5, Test 1 (Chapters 1 – 3)
- Week 4: 4.1 – 4.2
- Week 5: 4.3, 5.1 – 5.2
- Week 6: 5.3, Test 2 (Chapters 4 – 5)
- Week 7: 6.1 – 6.2
- Week 8: 7.1 – 7.3
- Week 9: 7.4 – 7.5, 8.1
- Week 10: 8.2, Test 3 (Chapter 6 – 8)
- Week 11: 9.1 – 9.2
- Week 12: 9.3 – 9.4, 10.1
- Week 13: 10.2 – 10.3
- Week 14: 10.4, Test 4 (Chapters 9 – 10)
- Week 15: 12.1 – 12.2

Final Exam to be given at the scheduled exam period

VIII. SUGGESTED WEEKLY SCHEDULE – 10 WEEK SEMESTER

- Week 1: 1.1 – 1.6, 2.1 – 2.3
- Week 2: 3.1 – 3.5, Test 1 (Chapters 1 – 3)
- Week 3: 4.1 – 4.3, 5.1 – 5.2
- Week 4: 5.3, 6.1 – 6.2, Test 2 (Chapters 4 – 5)
- Week 5: 7.1 – 7.5
- Week 6: 8.1 – 8.2, Test 3 (Chapters 6 – 8)
- Week 7: 9.1 – 9.4
- Week 8: 10.1 – 10.4
- Week 9: 12.1, Test 4 (Chapters 8 – 9)
- Week 10: 12.2, **Final Exam**

IX. ADDITIONAL MATERIAL AVAILABLE TO STUDENTS

TCC Student ID Required to Use these Resources

1. Instructor's Solution Manual Available in Math Lab
2. Videos available through MML

X. NOTES TO INSTRUCTORS

1. If you have extra time, you are welcome to cover additional topics. The listed topics are the minimum requirements for the course.
2. Online students will follow the same schedule, but the four tests will be replaced by proctored midterm and final exams as well as online quizzes for each chapter.
3. Instructors should include data analysis projects as a method of assessment, along with the online homework, tests, and final exam already mentioned. Quizzes and other types of assessment may also be used at the instructor's discretion.