Math 150:
Mathematics for the Contemporary World

Course Syllabus

3 credits, 3 hrs. /week (42 hours)

Text: J. O. Briggs and W. L. Briggs, <u>Using and Understanding Mathematics: A Quantitative Reasoning Approach</u>, Addison Wesley, 5th ed., 2011 plus supplementary readings supplied by the instructor.

Students must obtain and learn how to use a calculator that contains square root and exponential (y^x) keys. The use of a cell-phone as a calculator is not permitted. Students should bring their calculators to class every day. Attendance and class participation will be considered in the determination of the course grade. Class exams will contain questions that require that students' answers be presented in correct and meaningful sentences or displayed pictorially.

Math 150
Text: Bennett & Briggs, Using and Understanding **Mathematics** (**5**th **ed**.)

<u>Section</u>

Review fractions, decimals (powers of ten).

1C <u>Sets and Venn diagrams</u>.

1D <u>Analyzing arguments</u>

2A <u>Units</u>

2B <u>Standardized units.</u>   Students should know the meanings of metric prefixes and simple conversions in the USCS

3A <u>Uses and Abuses of Percentages.</u>

3B <u>Putting Number in Perspective</u>.

3D <u>Index Numbers</u>

5A <u>Fundamentals of Statistics.</u>

5B <u>Should you believe a statistical survey?</u>

5C <u>Statistical Tables and Graphs.</u>

5D <u>Graphics in the Media</u>

9A <u>Functions</u>

9B <u>Linear Modeling</u>

8A <u>Growth: Exponential vs. Linear</u>

8B <u>Doubling Time/Half Life</u>

9C <u>Exponential Modeling</u>

6A <u>Characterizing Data</u>

6B <u>Measures of Variation</u>

6C <u>Normal Distributions</u>

6D <u>Statistical Inference</u>

COURSE LEARNING OUTCOMES

DEPARTMENT: MATHEMATICS
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COURSE #: 15000 **COURSE TITLE:** Mathematics for the Contemporary World CATEGORY: Required for BA students unless Pre-calculus is taken TERM OFFERED: every term PRE-REQUISITES: None PRE/CO-REQUISITES: HOURS/CREDITS: 3 hr./wk. 3 credits DATE EFFECTIVE: January 18, 2007 COURSE COORDINATOR: Rochelle H. Ring	**CATALOG DESCRIPTION** Bombarded by statistics, assailed by advertisers and advocates of all persuasions, the average person needs mathematics to make sense of the world. This course aims to give students the tools needed to critically examine the quantitative issues of our times. Students will learn the basics of logical reasoning, using graphs and algebra to create quantitative models and the role of statistics and probability in analyzing data. We will apply these ideas to assess the quantitative claims raised in contemporary case studies commonly discussed in the media.

COURSE LEARNING OUTCOMES

Please describe below all learning outcomes of the course, and indicate the letter(s) of the corresponding Departmental Learning Outcome(s) (see list at bottom) in the column at right.

After taking this course the student should be able to:

	Contributes to Departmental Learning Outcome(s):
1. identify fallacious arguments and test the validity of an argument by the use of Venn diagrams or the laws of logic.	c
2. solve quantitative problems by identifying units and use rules for operations on quantities with units to solve 'real-world' problems.	a, c, d
3. convert among standardized units and solve complex 'real-world' problems using a calculator.	a, c, d
4. interpret and calculate in examples with subtle uses of percentages describing change or comparison in examples drawn from media sources.	a, c, d
5. interpret and manipulate very large/small numbers including the use of scale ratios.	a, c, d
6. identify types of studies and sampling methods and evaluate sources of bias in statistical studies.	c
7. construct and interpret statistical graphs and tables and extract data from graphics from media sources.	a, c, d
8. characterize data distributions using measures of central tendency and variation and solve problems involving normally distributed data.	a, c, d
9. create and use functions to model linear processes.	a, b, c, d
10. contrast linear and exponential growth/decay, identifying situations in which each occurs.	a, b, c, d
11. convert between percentage rates (for growth/decay) and doubling(or halving) times and solve problems involving exponential change.	a, c, d

Note: CLO d (use of technology) is limited to the use of the calculator

COURSE ASSESSMENT TOOLS

Please describe below all assessment tools that are used in the course.
You may also indicate the percentage that each assessment contributes to the final grade.

1. Exams, quizzes, classwork (60 %)

2. Final exam (40%)

DEPARTMENTAL LEARNING OUTCOMES *(to be filled out by departmental mentor)*

a. perform numeric and symbolic computations
b. construct and apply symbolic and graphical representations of functions
c. model real-life problems mathematically
d use technology appropriately to analyze mathematical problems
e. state (e1) and apply (e2) mathematical definitions and theorems
f. prove fundamental theorems
g. construct and present (generally in writing, but, occasionally, orally) a rigorous mathematical argument.