SMTE 1351.001: Fundamentals of Math II
Spring 2013

I. COURSE INFORMATION

Meeting time & place: TR 2:00 in CS 107
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Office: CI-360
E-mail: elaine.young@tamucc.edu
Webpage: http://faculty.tamucc.edu/eyoung/1351/index.html

II. COURSE DESCRIPTION

The conceptual framework for understanding and applying properties, models and operations related to various data systems in problem solving settings. This research-based course provides the conceptual framework for increased understanding and application of rational numbers, probability, and statistics. Communicating concepts, processes or solutions effectively, in oral and written forms, will be emphasized. Using physical models to teach the content topics and understanding how learning occurs through their use will be a substantial portion of the class instructional plan.

III. PREREQUISITES for the COURSE

MATH 1314: College Algebra or equivalent
SMTE 1350: Fundamentals of Math I

IV. TEXTS and OTHER SUPPLIES REQUIRED

- Scientific calculator
- TEKS (http://www.tea.state.tx.us/rules/tac/chapter111/index.html)
- Principles and Standards for School Mathematics, NCTM, 2000 (online)

V. STUDENT LEARNING OUTCOMES

Decimals
- Demonstrate a sense of quantity, relationship, and equivalency for fractions, decimals and percents
- Identify face/place values and expanded form for decimal numbers
- Determine when zero is a significant/insignificant digit
- Model decimals using decimal grids (area models)
- Model binary operations of decimals using decimal grids (area models)
- Analyze common error patterns for operations on decimals
- Explain and justify traditional algorithms for binary operations on decimals
- Convert between fraction, decimal, and percent representation for rational numbers
- Appropriately round decimals to a given place value
- Order a set of decimals from smallest to greatest
- Find at least two decimals between a given pair of decimals

Percent
- Convert between fraction, decimal, and percent form for rational numbers
- Calculate and explain percent change (percent increase and percent decrease)
- Model percent using the percent bar model
• Recognize, interpret, and evaluation appropriateness of percents less than 1% and greater than 100%

Ratio & proportion
• Model and solve proportional problems using concrete, numeric, tabular and algebraic methods

Probability
• Describe and compute the outcome of simple and compound events
• Explore concepts of probability through data collections, experiments & simulations
• Create, use and interpret tree diagrams for simple, conditional and joint probabilities
• Compute odds and convert to/from probabilities
• Compute permutations and combinations for real-world scenarios

Statistical graphs
• Collect, organize, display, investigate and answer questions with data from real-world situations
• Make predictions, support arguments and draw conclusions using summary statistics and graphs to analyze and interpret one-variable data
• Communicate the results of a statistical investigation using appropriate language
• Design, conduct, analyze and interpret surveys and statistical experiments
• Create and interpret graphs (pie graph, pictograph, bar graph, histogram, line plot, line graph, map chart, frequency polygon, stem & leaf plot, scatterplot) to communicate mathematical information
• Approximate the line of regression on a scatterplot and explain the trend
• Show awareness of quality graphs and possible abuses of statistical graphs

Statistical measures
• Describe and compute measures of centrality (mean, median, mode) and measures of dispersion (range, IQR, variance, standard deviation)

Normal curve
• Use the graph of the normal distribution to make inferences about a population
• Compute and interpret z-scores and percentiles for a given data set
• Compare two data sets using z-scores

Mathematical processes
• Recognize that a mathematical problem can be solved in a variety of ways, evaluate the appropriateness of various strategies, and select an appropriate strategy for a given problem
• Evaluate the reasonableness of a solution to a given problem
• Use physical and numerical models to represent a given problem or mathematical procedure
• Recognize that assumptions are made when solving problems and identify and evaluate those assumptions

Mathematical Perspectives
• Understand and apply how mathematics progresses from concrete to representation to abstract generalizations

Communication
Communicate mathematical ideas and concepts in age-appropriate oral, written and visual forms for a class presentation

Use mathematical processes to reason mathematically, solve mathematical problems, make mathematical connections within and outside of mathematics, and communicate mathematically

Translate mathematical statements among developmentally appropriate language, standard English, mathematical language, and symbolic mathematics

Technology

Use appropriate technology such as calculators, computer software, and the Internet to explore, research, solve, create and compare mathematical situations and representations

VI. INSTRUCTIONAL METHODS and ACTIVITIES

The course will be a combination of lectures, individual and group work. Students are expected to participate in group and whole class discussions by contributing knowledge and thoughtful evaluation of the contribution of others. Using physical models and understanding how learning occurs through their use will be a substantial portion of the class instructional plan.

VII. EVALUATION and GRADE ASSIGNMENT

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<tr>
<th>Component</th>
<th>Percentage</th>
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<th>Description</th>
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<tbody>
<tr>
<td>Homework</td>
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<td>A &gt; 90%</td>
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<tr>
<td>Presentation</td>
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<td>B 80% - 89%</td>
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<td>Family Math Night</td>
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<td>C 70% - 79%</td>
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<td>Final Exam</td>
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VIII. TENTATIVE COURSE SCHEDULE – see course webpages

IX. CLASS POLICIES

Academic Honesty. University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, forgery or plagiarism.

Notice to Students with Disabilities. Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible.

Grade Appeal Process. As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C1.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.