I. COURSE INFORMATION

Meeting time & place: TR 9:30 & 12:30 in CS 107
Instructor: Dr. Elaine Young
Office Address: CI-360
Office Phone: 825-2819
E-mail Address: Elaine.Young@tamucc.edu
Web Address: http://sci.tamucc.edu/~eyoung/
Office hours: Tuesdays & Thursdays 8:30-9:15; 10:45-11:30; 2:00-3:00

II. COURSE DESCRIPTION

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.

This course will be taught using the partnering framework. You will be expected to research and use technology appropriately to guide your own learning in the class. The teacher will act as a facilitator as you investigate mathematical content in rational number applications, probability, and statistics. The course will require you to give short presentations frequently, either individually or in pairs or groups.

III. PREREQUISITES for the COURSE

- MATH 1314: College Algebra
- 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 120-day trial)

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 and binary operations 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 form 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 decimal grids
- Recognize, interpret, and evaluation appropriateness of percents less than 1% and greater 100%

Ratio & proportion

- Model and solve proportional problems using concrete, numeric, tabular, graphic and algebraic methods

Probability

- Describe and compute the outcome of simple and compound events
- Explore concepts of probability through 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

• Investigate and answer questions by collecting, organizing and displaying data from real-world situations
• Support arguments, make predictions 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
• 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, midrange) and measures of dispersion (range, variance, standard deviation)

Normal curve

• Use the graph of the normal distribution to make inferences about a population
• Compute 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
- Reflect on personal learning, change of attitude and beliefs, and growth in understanding through mathematical journaling
- 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 based on lecture, discussion, collaborative groups, manipulatives, and technology. Students are expected to participate in group and whole class activities and discussions, and contribute their knowledge and thoughtful evaluation of the contribution of others.

VII. EVALUATION and GRADE ASSIGNMENT

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<th>Assessment</th>
<th>Weight</th>
<th>Grade</th>
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<tr>
<td>Classwork</td>
<td>25%</td>
<td>A</td>
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<td>Professional development (FMN)</td>
<td>25%</td>
<td>B</td>
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<td>Class presentation</td>
<td>25%</td>
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<td>Exam</td>
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**Classwork** -- includes individual and group work in class, journals, discussions, readings, written assignments, worksheets, and quizzes.

**Professional development** -- choose and complete professional development activities to accumulate 100 points. Some activities may be repeated with permission of instructor. Check with the instructor to make sure your activity meets the expectations. Family Math Night is one of the choices in this category. You will be creating and putting on a FAMILY MATH NIGHT at a local elementary school. This will entail time and effort outside of class.

**Class presentation** -- the last week of class will be presentations. You are expected to use appropriate technology to research and present your global issue.

**Exam** -- the course exam will be toward the end of the semester and will cover all content.

**VIII. TENTATIVE COURSE SCHEDULE** (See course calendar online)

4 weeks: Rational number applications (fractions, decimals, percent)

2 weeks: Ratio & proportion

4 weeks: Probability, permutation, odds

4 weeks: Statistical graphs, measures, normal distribution

2 weeks: Class presentations

**IX. CLASS POLICIES**
Participation: You are expected to come to class prepared to research, discuss, and present the content topics of the day. Appropriate technology will be used to search, understand, compare, evaluate, and create short presentations to the group.

Cell phones, pagers and earpieces: Please remember to bring your calculator. Please turn cell phones off during class. No cell phones, pages, or earpieces will be allowed during quizzes and exams (please put them in your bag).

Written work: I expect written assignments to be typewritten or neatly printed with pages stapled together (no folding or paper clips please). I reserve the right to penalize sloppy, unorganized, unstapled, misspelled or poor grammatical work. The Writing Center is available for help with written assignments.

Attendance: Attendance is expected and is reflected in individual and group participation. If you must be absent, I expect you to communicate with me AND YOUR GROUP before class or as soon as possible. Email and/or phone messages are encouraged.

Late Homework: In general, homework is due at the beginning of class. Under select circumstances (at instructor discretion), homework may be turned in before 5:00 PM the same day by sliding it under my office door. I reserve the right to enforce exact deadlines on particular assignments.

Exams: You are required to attend the final exam, so please make vacation plans for the holidays accordingly. The final exam will be cumulative; a link to the review sheet is on the course calendar website. The final exam is scheduled for

Help: The best source of help for this course is the people directly involved in this course -- your peers, the SMTE tutors, or the instructor -- during class or office hours.

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.

**REFERENCES**