July 18, 2013

1. College: **Science and Mathematics**
2. Department: **Mathematics and Statistics**
3. Course status: **existing; does not require modification**
4. Course prefix and number: **MTH 110**
5. Course title: **Mathematics in Society**
6. Course catalog description: **Provides an introduction to mathematical thinking emphasizing analysis of information for decision-making.**
7. Number of semester credit hours: **3**
8. Estimated total course enrollment per year: **650**
9. Course prerequisites and/or required qualifications for enrolling in the class: **ACT Math score 19 or higher, SAT Math score 500 or higher, THEA score 230 or higher, ASSET score 38 or higher, COMPASS score 39 or higher, ACCUPLACER score 63 or higher, or Grade of C or higher in MTH 099**
10. Course **is not/will not be** available online.
11. Foundational Component Area: **Mathematics**
12. Explain why this course fits into this foundation component area: **This course is designed to develop communication skills and critical thinking skills in students as they learn quantitative concepts and skills that are needed in everyday life. There are six primary content areas covered in this course, each of which is highly relevant to the quantitative concepts, skills, communication, and reasoning that is needed in everyday life. Those content areas are as follows: critical thinking (problem solving), logic (forms and interpretation of statement and arguments), sets (reasoning involving individuals vs. categories), financial mathematics (interest, loans, savings), probability (quantitative communication and reasoning involving uncertainty), and statistics (analysis, interpretation, and inferences from quantitative data). All six of these content areas focus on patterns and relationships among numbers, expressing everyday concepts in quantitative or symbolic ways, logic, and communication of reasoning and results. Each has its own appropriate quantitative tools and applications to everyday experience.**
13. Core Objectives
    - Critical Thinking - Students will be instructed by faculty, during class time in particular, on various approaches to solve problems; on using tools of logic to analyze the statements and arguments that they make for meaning, truth and validity; on the issues of reasoning involving categories of objects as well as individuals; on how to model financial questions via formulas and how to use those formulas to calculate and communicate information about interest, loans, and savings; on how to count the number of possibilities and quantify and communicate the uncertainty of statements; on how to analyze data and interpret it. Each of the covered topics requires the students to think critically and solve problems. In the course requirements (homework, quizzes, and exams), students will use creative and innovative thinking (critical thinking) as they sort through an arsenal of mathematical tools to see which tool is most appropriate to solve a given problem. They will develop skills initially through reflecting on class content, reading the book, and by homework assignments. Feedback on

homework assignments will allow further refinement of skills. Quizzes and exams will assess mastery of the required critical thinking skills.

- Communication Skills - Students will be instructed by faculty, during class time in particular, as to how mathematical information should be communicated to be sure that the meaning is clear. This instruction will include how to use complete and correct notation, how to visually organize sequential mathematical information and how to provide supporting justification for conclusions. This instruction is included in every topic of the course and includes instruction as to what are appropriate expectations for communication for each topic. In homework, quizzes, and exams, the students will demonstrate written and visual communication skills by constructing tables, graphs and sequential arguments to support conclusions. Faculty will assess communication skills in homework, quizzes, and exams and give student feedback on the development of their communication skills.
- Empirical and Quantitative Skills - • Students will be instructed on using empirical and quantitative skills to encode, analyze, manipulate and draw conclusions about everyday statements and data using logical reasoning, about operations on sets, about financial concepts of interest, savings, and loans, about probabilistic statements, and about statistical data and related situations (e.g., correlation vs. causation). In the course requirements of homework, quizzes, and exams, the students will manipulate and analyze the data derived from interpreting and applying logic, set, financial, probabilistic, or statistical reasoning. The student will initially develop empirical and quantitative skills by reflecting on class content, reading the book, and by practicing with homework assignments that require these skills. Feedback on homework assignments will allow further refinement of skills through discovery of error. Quizzes and exams will assess mastery of the required empirical and quantitative skills.

Contact person for questions about this submission:

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