COURSE SYLLABUS
MATH 123-P04, Mathematics in Modern Society
TR, 5:00-6:20 pm (3 credits)

Semester/Year: Spring 2008
Instructor: Estella Elliott
Email: eelliott@csi.edu
Office: Shields 207B
Office Hours: MTWF, 2-3 pm; R, 4-4:50 pm
Office Phone: 732-6823

Course Description: This survey course provides an opportunity to acquire an appreciation of the nature of mathematics and its relation to other aspects of our culture. The course is rigorous but not rigid and applies mathematics to real-world problems.

Prerequisite: MATH 025/010 with C grade or higher, or Math Placement Test (COMPASS Algebra score of 46 or higher).

Textbook and Supplies:
- Scientific calculator
- Loose leaf paper

Course Objective: Math 123, Math in Modern Society, is the capstone course in mathematics for those choosing not to continue their formal study of mathematics. This course is specifically geared toward helping diverse students with different career objectives. Successful completion of Math 123 will provide students with solid conceptual understanding and problem solving abilities necessary for practical application of the mathematics found in everyday life.

Outcomes Assessment: Daily assignments, chapter tests, and a comprehensive final exam will be used to assess how well students achieve the expected course outcomes. Exams as well as student evaluations will be analyzed to help improve curriculum and instruction for the course. Also, regular informal feedback will be solicited in an effort to improve the class as it progresses.

The course content includes:
- Critical thinking (inductive and deductive reasoning, estimation)
- Problem solving (understand the problem, devise a plan, carry out the plan, check the answer)
- Number systems (our Hindu-Arabic system, early positional systems, and converting to number bases other than ten)
- Number theory (prime numbers, composite numbers, divisibility, greatest common divisor, least common multiple)
- Operations with integers (order of operations, using number lines, absolute value, adding, subtracting, multiplying, dividing, using inequality symbols)
- Operations with rational numbers (reducing fractions, changing fractions to decimals, changing decimals to fractions, adding and subtracting fractions)
- Operations with irrational numbers (simplify, multiply, add, subtract, and rationalize expressions with square roots)
- Expressions with exponents (use positive and negative exponents, write and use scientific notation)
- Real numbers (classify, identify properties)
j. Ratios, proportions, direct variations and inverse variations (identify, solve)
k. Quadratic equations (solve by factoring and using quadratic formula)
l. Graphs of ordered pairs and equations
m. Functions (evaluate, graph, use vertical line test, analyze the graph of a function to gather information)
n. Linear functions (find intercepts, calculate slope, graph, interpret slope and intercepts in applied problems)
o. Quadratic functions (graph, find vertex and intercepts, solve application problems)
p. Exponential functions (graph, solve application problems)
q. Systems of linear equations (solve systems having two variables)
r. Consumer mathematics and financial management (percents, simple and compound interest, installment buying, mortgages and the cost of home ownership, investing in stocks, bonds and mutual funds)
s. Measurement in metrics (length, area, volume, weight, temperature)
t. Set theory (basic set concepts, Venn diagrams, subsets, intersection, union) OR Counting methods (determine the number of possible outcomes, count permutations, count combinations)

In addition, students will study part or all of the following additional concepts and processes, to be determined by each individual instructor:

a. Logic (statements, negations, quantified statements, compound statements, connectives, truth tables, conditional and bi-conditional statements, arguments)
b. Computations in bases other than base ten
c. Early numeration systems (Egyptian, Roman, Chinese, Greek)
d. Arithmetic and geometric sequences
e. Linear inequalities (one variable, two variable, linear programming)
f. Geometry (points, lines, planes, angles, triangles, polygons, perimeter, area, circumference, volume, right triangle trigonometry)
g. Probability
h. Statistics (sampling, frequency distributions, graphs, central tendencies, dispersion, normal distribution, scatter plots, correlation, regression lines)

As part of departmental analysis of outcomes in this course and its place in the Mathematics program, student completion of the pre-requisite, success in the current course, success in subsequent courses and student satisfaction will be reviewed by the instructor and the department chair. A report containing this information will be submitted by department faculty to determine what, if any, changes can be made to improve the course in terms of content, focus, and instruction.

**On-line Course Evaluation:** Students are strongly encouraged to complete evaluations at the end of the course. Evaluations are very important to assist the teaching staff to continually improve the course. Evaluations are available online at: [http://evaluation.csi.edu](http://evaluation.csi.edu). Evaluations open up two weeks prior to the end of the course. The last day to complete an evaluation is the last day of the course. During the time the evaluations are open, students can complete the course evaluations at their convenience from any computer with Internet access, including in the open lab in the Library and in the SUB. When students log in they should see the evaluations for the courses in which they are enrolled. Evaluations are anonymous. Filling out the evaluation should only take a few minutes. Your honest feedback is greatly appreciated.
Policies and Procedures:

- **STUDENTS WITH DISABILITIES:** Any student with a documented disability may be eligible for related accommodations. To determine eligibility and secure services, students should contact the coordinator of Disability Services, Candida Mumford, at their first opportunity after registration for a class. Appointments may be made or more information is available at (208)732-6260 (voice) or (208)734-9299 (TDD) or email cmumford@csi.edu.

- **LEARNING ASSISTANCE RESOURCES:**
  a. Instructor: If you need extra explanation, stop by my office during office hours or set up an appointment for help at another time.
  b. Textbook: Read and study the examples in your textbook.
  c. Free Peer Tutoring: Free tutoring is available at the Math Lab (Shields 207) and the Academic Development Center Instruction Lab (GRM 202).
  d. DVDs and CDs: DVDs and CDs of the subject matter are available in several locations.
     i. CSI Library – Front Desk (overnight checkout or view at the Library)
     ii. All CSI Outreach Centers (overnight checkout)
  e. Study Groups: Study groups are a great way to learn. Organize one right away!

- **COMMUNICATION:** Email is the primary source of written communication with all CSI students. Messages from instructors and various offices such as Admission and Records, Advising, Financial Aid, Scholarships, etc. will be sent to the students’ CSI accounts (NOT their personal email accounts). It is the student’s responsibility to check their CSI email accounts regularly. Failing to do so will result in missing important messages and deadlines.

- **COMPUTER LITERACY:** Please refer to the College of Southern Idaho Catalog, under Computer Literacy in the section, “Degree and Certificate Requirements” on page 25 of the College of Southern Idaho 2007-2008 Catalog.

- **CHEATING:** Cheating is unacceptable. Students caught cheating will be given a 0% for that assignment or exam and may face further disciplinary action.

- **STUDENT BEHAVIOUR:** Refer to pages 14-16 in the CSI catalog.

- **ATTENDANCE:** All students are responsible for the material presented in class whether they are there or not. Dropping or withdrawing from the class is the student’s responsibility.

- **EXAMS:** Regular exams will be given at the Campus Testing Center. The Twin Falls Center is located in the Meyerhoeffer Building, Room 230 and is open Monday through Thursday, 8:00 am – 9:30 pm; and Friday, 8:00am – 5:00 pm. You must have a photo ID and arrive at least one hour before closing times. The exams will be available over a 3-day period beginning the day we review the test material in class. There will be no make-up exams given! If you have an unforeseeable and unavoidable emergency, I will replace that exam score with the final exam score, weighted to 100 points. The take-home exam will be assigned in class and collected on April 30. The comprehensive final exam will be given in the classroom with the instructor present. A make-up final will not be granted under any circumstances.

- **HOMEWORK:** Homework will be assigned during most class sessions and will be due at the beginning of the next class session. You must show your work to receive full
credit! Late homework will not be accepted under any circumstances! At the end of the semester, the 5 lowest homework scores will be dropped.

- **GRADING:**
  - 5 Exams worth 100 points each 500 points
  - Take-Home Exam 100 points
  - Homework 100 points
  - Final Exam 200 points
  - Total Possible 900 points

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<tr>
<th>Points</th>
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<tbody>
<tr>
<td>810-900</td>
<td>A</td>
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<td>720-809</td>
<td>B</td>
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<td>630-719</td>
<td>C</td>
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<td>540-629</td>
<td>D</td>
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<td>0-539</td>
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**Course Outline**

(Tentative and subject to change at any time)

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<thead>
<tr>
<th>Date</th>
<th>Section</th>
<th>Topic</th>
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<tbody>
<tr>
<td>January 15</td>
<td>Intro, 1.1, 1.3</td>
<td>Inductive and Deductive Reasoning/Problem Solving</td>
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<tr>
<td>17</td>
<td>4.1</td>
<td>Our Hindu-Arabic System and Early Positional Systems</td>
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<td>22</td>
<td>4.2</td>
<td>Number Bases in Positional Systems</td>
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<td>24</td>
<td>4.4</td>
<td>Looking Back at Early Numeration Systems</td>
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<td>29</td>
<td>Review, 5.1</td>
<td>Number Theory: Prime and Composite Numbers</td>
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<tr>
<td>January 29, 30, 31</td>
<td>5.1, 5.2</td>
<td>Number Theory: Prime and Composite Numbers/The Integers; Order of Operations</td>
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<td>31</td>
<td>5.3, 5.4</td>
<td>The Rational Numbers/The Irrational Numbers</td>
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<td>February 7</td>
<td>5.4, 5.5</td>
<td>The Irrational Numbers/Real Numbers and Their Properties</td>
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<td>12</td>
<td>5.6, Review</td>
<td>Exponents and Scientific Notation</td>
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<td>February 12, 13, 14</td>
<td>6.4, 6.6</td>
<td>Ratio, Proportion, and Variation/Quadratic Equations</td>
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<td>14</td>
<td>6.6, 7.1</td>
<td>Quadratic Equations/Graphing and Functions</td>
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<tr>
<td>21</td>
<td>7.2</td>
<td>Linear Functions and Their Graphs</td>
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<td>26</td>
<td>7.3</td>
<td>Systems of Linear Equations in Two Variables</td>
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<td>28</td>
<td>7.6</td>
<td>Approximating Reality with Nonlinear Models</td>
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<td>March</td>
<td>4</td>
<td>Review</td>
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<tr>
<td>April</td>
<td>1</td>
<td>Measuring Area and Volume/Measuring Weight and Temperature</td>
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<td>April</td>
<td>3</td>
<td>Points, Lines, Planes, and Angles/Triangles</td>
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<tr>
<td>May</td>
<td>1</td>
<td>Review</td>
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**March 4, 5, 6 – Take Exam 3 in Testing Center**

- 6.1, 6.2
- Percent, Sales Tax, and Income Tax/Simple Interest
- 11.3, 11.5
- Compound Interest/Installment Buying
- 13.5, 13.6
- Installment Buying/Amortization and the Cost of Home Ownership

March 17-21, Spring Vacation!

**March 25, 26, 27 – Take Exam 4 in Testing Center**

- 27.1, 27.2
- Measuring Length; The Metric System/Measuring Area and Volume

**April 8, 9, 10 – Take Exam 5 in Testing Center**

- 10.1, 10.2
- Points, Lines, Planes, and Angles/Triangles
- 10.4
- Area and Circumference

Final Exam – Tuesday, May 6, 6:00 pm to 8:00 pm (date and time may change)
Homework Assignment Format
Math 123
Spring 2008

1. Use loose leaf paper.
2. Write name, course title (Math 123), center (Twin Falls, Burley, or Hailey), and homework section in top right corner of first page.
3. Circle or highlight final answer when possible.
4. Show the work necessary to complete each problem. If little, no, or incorrect work is shown, you will not receive credit for that problem even if you have the correct answer.
5. Write legibly. If I cannot decipher your work, you will not receive credit.
6. Staple pages together in top left corner.
7. Fold assignment lengthwise with first page on inside of fold.
8. Write name, course title, center, and homework section on outside of folded assignment.