

# Mathematics 100 Quantitative Reasoning & Problem Solving Course Syllabus

Course number: MA100  
Course title: Quantitative Reasoning & Problem Solving  
Required Texts: Excursions in Modern Mathematics, sixth edition  
Peter Tannenbaum

## Course Goals:

The purposes of this course are to:

- Increase student's awareness of the richness of kinds of mathematics used in the modern world,
- Decrease student's anxiety about mathematics and increase their confidence in dealing with issues, which have a mathematical component, and
- Improve student's abilities to solve realistic problems, which involve mathematics.

## Attendance

Students are expected to attend all classes and are responsible for all material covered in class. If a student needs to be absent, they are expected to contact a classmate for the assignment and to complete it in time for return to class. If more than one class is going to be missed, the student will need to contact the professor to determine the feasibility of making up the work.

## Course Requirements, Methods of Evaluation, and Grading Policy

- I. Homework** **10%**
- Individual Homework
  - Group Homework

Homework exercises will be assigned throughout the semester.

All homework will be collected on the **second** class of each week.

**II. Problem Solving In-Class Packet** **10%**

During each class period we will have a problem solving activity for class discussion from the problem-solving supplement. Each problem will be provided during that class session only, and will be completed in a group/collaborative setting. Keep these problems in a folder/packet to be submitted for review and evaluation at end of semester.

**III. Projects including Presentations and Reports** **20%**

Students will complete two out-of-class projects for class presentation. These projects will center on extending and enriching our in-class studies.

There are two parts to each project. They include a research paper and a presentation. Students must receive approval for their topic from the professor. Specific guidelines for the presentations and paper will be provided and reviewed in class. Students will be required to make a 10 minute presentation to the class. This presentation must be accurate in mathematical content, informative and involve the class. Students will be required to make and then show/demonstrate to the class a display, game, or handout of some nature as related to their topic. Students will also be required to submit a typed report on their topic. This report cannot be more than two pages, double-spaced.

- Project I Golden Rectangle from Chapter 9
- Project II You, as a group, are to choose one of the suggested topics to research, present to the class and write a paper. A suggested list will be presented to you.

**IV. Tests** **50%**

Tests will be given at the completion of each chapter and will be announced in advance. There will be a total of five tests.

**V. Comprehensive Final** **10%**

<p>Problem Solving 1, 2, 3, 4</p> <p>Chapter 9 Special Growth in Nature</p> <p>9.1: ID HW: p.329 #1-5; GRP HW: p.330 #7, 9, 11ab, 13, 14a, 16a</p> <p>9.2: Golden ratio project</p> <p>9.3, 9.4: ID HW: p.331 #19b, 21; GRP HW: p.333 #51, 68</p>
<p>Problem Solving 5, 6, 7, 8</p> <p>Chapter 5 Euler Circuits</p> <p>5.1 to 5.3: ID HW: p.185 #1, 2, 3, 5, 7a; GRP HW: p.186 #12abcdef, 13</p> <p>5.4, 5.5: ID HW: p.187 #17 (Show two paths &amp; indicate which Theorem supports results), 18 (Indicate path); GRP HW: p.187 #19, 20, 21, 27, 38a</p>
<p>Problem Solving 9, 10, 11, 12</p> <p>Chapter 7 The Mathematics of Networks</p> <p>7.1, 7.2, 7.3: ID HW: p.259 #1, 2; GRP HW: p.259 #3, 5, 7, 11, 12, 13a, 19, 20, 24</p> <p>7.4: ID HW: Construction of Torricelli/Fermat's point, blowing a "square bubble."</p>
<p>Problem Solving 13, 14, 15, 16</p> <p>Chapter 14 Descriptive Statistics</p> <p>14.1: ID HW: p.499 #1, 2; GRP HW: p.500 #3-6</p> <p>14.2: GRP HW: p.501 #19-22</p> <p>14.3: GRP HW: p.502 #23, 24, 27, 29, 32, 33, 38, 41, 45</p>
<p>Problem Solving 17, 18, 19, 20</p> <p>Chapter 15, Chances, Probabilities &amp; Odds</p> <p>15.1, 15.2: GRP HW: p.531 #1, 3, 4, 7, 9, 11, 12, 13</p> <p>15.3-15.5: GRP HW: p.533 #19, 20, 32, 33, 41</p> <p>15.6: GRP HW: p.534 #44, 47, 50</p>
<p>Chapter 13 Collecting Statistical Data</p> <p>13.1, 13.2, 13.3: GRP HW: p.467 #1-10, 65, 66</p>