SHAW UNIVERSITY
College of Arts and Sciences
Department of Natural Sciences and Mathematics

MAT111 (3 credit hours)  Spring 2009 ( PRE: MAT 110)
GENERAL MATHEMATICS I

Instructor:  Office Location:
Email:  Telephone:
Office Hours:

Program Goal

The goal of the General Education program that pertains to the Mathematics Unit is:

To ensure that students possess a breadth of knowledge and skills through integrated study of coursework in various disciplines.

Program Learning Outcomes (PLO)

1. Students will gain knowledge of the liberal arts and sciences from 42-68 credit hours (depending on the major) of General Education/Core Curriculum integrated courses in the humanities/fine arts; social/behavioral sciences; natural science/mathematics; physical science; and allied health professions for which course syllabi specify expected student learning outcomes.
2. Students will demonstrate their skills in reading, writing, critical thinking, mathematics, and science.
3. Students will demonstrate a multidisciplinary perspective.

Course Description

This is a University Core Course in Mathematics taken by Freshmen. Students in this course are expected to have successfully completed or placed out of MAT 110. The students in this course are introduced to functions, graphs, linear inequalities, matrices, linear programming, the metric system, geometry, and consumer mathematics. The students are trained in critical thinking and problem solving skills to be applied to real world situations like mortgage, credit card interests and other topics. This course is the second of a three-sequence study in college mathematics.

Student Learning Outcomes

<table>
<thead>
<tr>
<th>Student Learning Outcomes (SLO)</th>
<th>Program Learning Outcomes (PLO) link to SLO</th>
<th>Assessment of Student Learning Outcomes (Assessment Tools)</th>
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<tbody>
<tr>
<td>After completing this course successfully, the students will able to do the following:</td>
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<tr>
<td>1. Solve two variable inequalities algebraically and graphically.</td>
<td># 1, 2, and 3</td>
<td>Exams, Quizzes &amp; Worksheets, Homework</td>
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<td>2. Solve for a specified variable from a given formula.</td>
<td># 1, 2, and 3</td>
<td>Exams, Quizzes &amp; Worksheets, Homework</td>
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<tr>
<td>3. Solve quadratic equations by factoring and by formula.</td>
<td># 1, 2, and 3</td>
<td>Exams, Quizzes &amp; Worksheets, Homework</td>
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<td>4.</td>
<td>Evaluate linear, quadratic, and exponential functions at given points.</td>
<td># 1, 2, and 3</td>
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<td>5.</td>
<td>Sketch the graphs of the above functions.</td>
<td># 1, 2, and 3</td>
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<td>6.</td>
<td>Solve word problems using the above techniques.</td>
<td># 1, 2, and 3</td>
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<td>7.</td>
<td>Solve 2x2 systems of linear equations algebraically, graphically, and using row reduction of matrices.</td>
<td># 1, 2, and 3</td>
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<td>8.</td>
<td>Solve systems of linear inequalities graphically</td>
<td># 1, 2, and 3</td>
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<td>9.</td>
<td>Apply these techniques and linear programming to solve application and optimization problems.</td>
<td># 1, 2, and 3</td>
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<td>10.</td>
<td>Change from one metric unit to another metric unit.</td>
<td># 1, 2, and 3</td>
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<tr>
<td>11.</td>
<td>Determine length, area, and volume using metric units.</td>
<td># 1, 2, and 3</td>
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<td>12.</td>
<td>Determine mass and temperature using metric units.</td>
<td># 1, 2, and 3</td>
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<tr>
<td>13.</td>
<td>Change from metric units to the customary system.</td>
<td># 1, 2, and 3</td>
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<tr>
<td>14.</td>
<td>Identify angles, vertical angles, parallel lines, and use their properties</td>
<td># 1, 2, and 3</td>
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<tr>
<td>15.</td>
<td>Compute areas and perimeters of polygons and plane figures.</td>
<td># 1, 2, and 3</td>
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<td>16.</td>
<td>Apply Pythagorean principle to compute lengths and areas.</td>
<td># 1, 2, and 3</td>
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<td>17.</td>
<td>Compute volumes of solids.</td>
<td># 1, 2, and 3</td>
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<td>18.</td>
<td>Convert percentages to fractions and decimals and vice versa</td>
<td># 1, 2, and 3</td>
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<tr>
<td>19.</td>
<td>Solve problems involving simple interest, and compound interest</td>
<td># 1, 2, and 3</td>
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<tr>
<td>20.</td>
<td>Calculate the Annual Percentage Rate (APR) on a loan</td>
<td># 1, 2, and 3</td>
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<tr>
<td>21.</td>
<td>Calculate monthly payment on a mortgage, personal loans</td>
<td># 1, 2, and 3</td>
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Required Textbook & Resource:


Graphing Paper & Ruler

Optional: Graphing Calculator

Topic Outline:

Chapter 6: Algebra, Graphs, and Functions: Linear inequalities in two variables - Solving quadratic equations by factoring and using formula - Functions and graphs. (Sections 6.8 to 6.10) (*CATE 5.7, 5.11). (NCDPI Core 2.2, 2.8), (NCDPI Div 2.2).

Chapter 7: Systems of Linear Equations and Inequalities - Matrices - Solving systems using matrices) - Systems of linear inequalities Linear programming. (Sections 7.1 to 7.6), (*CATE 5.8), (NCDPI Core 2.2, 2.8), (NCDPI Div 2.2), (NCDPI Tech 2.1, 3.2, 3.3).

Chapter 8: The Metric System – Basic Terms and Conversions within the Metric System – Length, Area, and Volume – Mass and Temperature – Dimensional Analysis and Conversions to and from the Metric System. (Sections 8.1 to 8.4) (*CATE 5.8).

Chapter 9: Geometry - Points, lines and angles - Polygons - Perimeter and Area - Volume. (Sections 9.1 to 9.5) (*CATE 5.13, 5.14, 6.1)

Chapter 11: Consumer Mathematics - Percent - Personal loans and interest - Compound Interest - Installment buying – Mortgage. (Sections 11.1 – 11.3). (NCDPI Tech 2.1, 3.2, 3.3).

Course Evaluation:

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<tr>
<th>Assignment</th>
<th>Percentage of Final Course Grade</th>
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<tbody>
<tr>
<td>Quizzes/Homework</td>
<td>30%</td>
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<tr>
<td>Tests</td>
<td>40%</td>
</tr>
<tr>
<td>Comprehensive Final Examination</td>
<td>30%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
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The following grading scale will be used: A = 90-100; B = 80-89; C = 70-79; D = 60-69; F = 59 and below. In general, make-up tests or quizzes will not be given, unless in extra-ordinary circumstances.

Sometime during the semester you will be asked to complete Student Evaluation (on line) of your instructor. Please make sure you do complete this. The completion of this might earn you some extra points.
**Attendance Policy:**

Students who miss classes are responsible for subject matter covered, any announcements made regarding quiz, test or any other relevant matter, during their absence.

More than 3 (if class meets 3 times a week) or 2 (if class meets 2 times a week) unexcused absences may result in failure in the course. You are responsible to find out or know about any announcements or the subject matter covered, during your absence.

**Student Classroom Decorum Expectations:**

To enhance the learning atmosphere of the classroom, students are expected to dress and behave in a fashion conducive to learning in the classroom. More specifically, students will refrain from disruptive classroom behavior i.e., **talking to classmates, disrespectful responses to teacher instructions; swearing; wearing** clothes that impede academic learning such as but not limited to, wearing body-revealing clothing and excessively baggy pants; hats/caps, and/or headdress. Food or drinks will not be allowed in the classroom or lab. Students will turn off their cell phones prior to entering the classroom. Students who exhibit the behaviors described above, or similar behaviors will be immediately dismissed from class at the third documented offense. The student will be readmitted to class only following a decision by the department chair. The student may appeal the decision of the department chair to the Dean of the College offering the course, and, subsequently, to the Office of the Vice President for Academic Affairs, and then to the President of Shaw University. The decision of the President will be final. Failure to follow the procedures herein outlined will result in termination of the appeal, and revert to the decision of the department chair.

Each behavior construed by the teacher/professor as noncontributive to learning will be recorded, properly documented, and appropriately reported to the student and to the chair of the academic department offering the course. The report will be in written form with a copy provided to both the student and the department chair. The faculty member should retain a copy for his/her own records.

Additional student behavior codes may be found in Student Affairs.