Basic Arithmetic and Algebra

MAT 012
Semester:
Credits: 0

Class hours: 6

Instructor Information:
Name:
Email:
Phone:
Office:

Course Description:
This course is a combination of remedial arithmetic skills and elementary algebra. It includes the arithmetic of integers, fractions, decimals, and percent. In addition, the course covers topics such as algebraic representation, operations with polynomials, solving linear equations, solving systems of two linear equations in two variables, exponents and radicals, factoring, and graphing linear equations. This is an accelerated course for students who have scored relatively high on the placement examination in pre-algebra.

Pre/Co-Requisites:
Pre-Requisite: ESL 062. Students who score 27 up to 34 on the COMPASS Pre-algebra exam and less than 40 on the COMPASS algebra exam are eligible to take MAT 012.

Student Learning Outcomes and Assessment:

<table>
<thead>
<tr>
<th>Course Student Learning Outcomes</th>
<th>Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students should be able to correctly compute a variety of operations involving real numbers in a number of different formats, including the correct usage of the order of operations.</td>
<td>1. Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
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<tr>
<td>2. Students should be able to correctly convert between a variety of real number types and formats.</td>
<td>2. Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
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<tr>
<td>3. Students should be able to make estimates and to check the reasonableness of solutions to calculations and problems involving real numbers.</td>
<td>3. Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
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<tr>
<td>4. Students should be able to solve applied word problems, including correctly setting up problems and translating between words and algebraic expressions and equations.</td>
<td>4. Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
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<tr>
<td>5. Students should be able to perform operations and solve equations involving algebraic expressions in the real numbers, including polynomial, rational, and radical expressions and equations, linear inequalities and systems of equations.</td>
<td>5. Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
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<tr>
<td>6. Students should be able to represent equations in the real numbers graphically, and translate between graphical and algebraic forms, and use both graphical and algebraic forms to solve problems.</td>
<td>6. Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
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General Education Outcomes and Assessment:

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<th>Measurements</th>
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<tr>
<td><strong>Communication Skills</strong>- Students will be able to write, read, listen and speak critically and effectively.</td>
<td>Homework, quizzes, online assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
</tr>
<tr>
<td><strong>Quantitative Reasoning</strong>- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.</td>
<td>Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
</tr>
<tr>
<td><strong>Information &amp; Technology Literacy</strong>- Students will be able to collect, evaluate and interpret information and effectively use information technologies.</td>
<td>Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.</td>
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</table>
Required Text and Readings:
OR 2) Stand-alone MathXL access code with eBook: ISBN 125670380X.

Math Lab Use: The Math Lab is located in S511. You will need a valid BMCC student ID to visit the Math Lab. Tutors are available in the Math Lab for free to all BMCC students. The Math Lab has worksheets with practice problems in stock, as well as computer- and video-based tutoring.

Use of Technology: All students are required to use the MathXL online courseware system. It contains videos, homework problems, chapter tests and quizzes, step-by-step help, an online version of the textbook, and more. Students can access the online courseware only by buying a new textbook that contains a student access card or by buying a separate access code from the bookstore or the publisher (at [www.mathxl.com](http://www.mathxl.com).) MathXL can be accessed on any computer that has internet access.

To register once you have a student access card, or to buy access online:

1. Have your access code from the textbook ready or a credit card to pay for access on the website.
2. Make sure to get the course ID for your course from your instructor.
4. Under “New User?” click on Register if you already have an access code, and Buy Now if you want to purchase one online, and follow the steps online to complete your purchase.
5. Click Accept to agree to the License Agreement and Privacy Policy.
6. On the Access Information Screen, you’ll be asked whether you already have a Pearson Education Account. If you aren’t sure whether you have a Pearson account, select Not Sure. Enter your email address and click Search. If you have an account, your login information will be sent to your email address within a few moments. You can then change your selection to Yes, and enter your login name and password as directed. Otherwise, select No.
7. When the new bottom part of the screen appears, if you already have an access code, choose “Access code.” Enter the access code from your textbook in the boxes that look like this

   ![Access Code](image)

   then click .
8. Enter information about yourself and BMCC (the zip code for BMCC is 10007). Enter the email address you use regularly (it does not have to be your BMCC email address).

   Create your own password and username. It can be any username and password that you want. Write this username and password in a safe place. From now on, you will get in by going to [www.mathXL.com](http://www.mathXL.com) and clicking on LOG IN under Returning Users.
9. When your registration process is complete you will see a confirmation screen. Click Log In Now under MathXL or go to [www.mathXL.com](http://www.mathXL.com), enter your login name and password, and click on Log In.
10. On the Welcome to MathXL screen, click on Enter MathXL.
11. Select “I am taking a course that is using MathXL, and need to enroll in my instructor’s course.” Type your course ID into the boxes:
12. After you enter your Course ID, you’ll see the course name. Make sure that the name of the course is correct. Then click Enroll.
13. The Enrollment Confirmation screen will show you the course you have enrolled in and may prompt you to run the Browser Check or Installation Wizard. If you are using a computer off campus and logging into MathXL for the first time, you must click Run Browser Check or Run Installation Wizard now.

Updated 8/14/12
Evaluation and Requirements of Students:

The final grade in this course will be a passing grade of S, or a failing grade of R. The **Class Grade will be 65% of the total grade and the CUNY EXAM will be 35% of the total grade.** A passing grade for the departmental Pre-Algebra Assessment Exam (PAAE) is **70 or higher.** A passing grade for the Departmental Final exam is **70 or higher.** A passing grade for the CUNY EXAM is **60 or higher.** Students must pass the CUNY EXAM to pass the course, in addition to satisfying a total grade of **74% or better.** If a student fails the PAAE exam, the student is required to complete the online Intervention Assignments (on MathXL) with a score of **70 or better.** The Intervention Assignment grade will replace the PAAE grade. Students will be given a second try of PAAE if needed during the Finals Week.

Those students who pass the PAAE with a 70 or better are exempt from the Intervention Assignment Requirement, but are **strongly** encouraged to do those assignments for practice. Our research has shown that **many more** students who do the Intervention Assignments pass the Departmental Final Exam than those who do not. Thus, it is a good idea for **all** students to do the Intervention Assignments, even if they have passed the midterm. These assignments are an **excellent** way to prepare for the Final and CUNY-Wide exams.

**Grade Distribution:**

**Suggested**
- Homework: 20 %
- Exams and quizzes: 25 %
- Departmental Final: 5 %

**Required**
- PAAE: 15 %
- CUNY EXAM: 35 %

**College Attendance Policy:**

1. **Absences**
   At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For this course, you are allowed seven hours of absence (not seven days). In the case of excessive absence, the instructor has the option to lower the grade or assign an “R” or “WU” grade.

2. **Class Attendance**
   If you do not attend class at least once in the first three weeks of the course and once in the fourth or fifth weeks, the Office of the Registrar is required to assign a grade of “WU”. Attendance in both regular and remedial courses is mandated by policy of the City University of New York. Instructors are required by New York State law to keep an official record of class attendance.

3. **Lateness**
   Classes begin promptly at the times indicated in the Schedule of Classes. Arrival in classes after the scheduled starting time constitutes a lateness. Latecomers may, at the discretion of the instructor, incur an official absence.

**Academic Adjustments for Students with Disabilities:**

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities. BMCC is committed to providing equal access to all programs and curricula to all students.

**BMCC Policy on Plagiarism and Academic Integrity Statement:**

Plagiarism is the presentation of someone else’s ideas, words or artistic, scientific, or technical work as one’s own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.

Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC’s web site, [www.bmcc.cuny.edu](http://www.bmcc.cuny.edu). For further information on integrity and behavior, please consult the college bulletin (also available online).

Updated 8/14/12
**Suggested Schedule:**

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<tr>
<th>Week 1</th>
<th>Arithmetic of Whole Numbers</th>
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<tbody>
<tr>
<td>Week 2</td>
<td>Fractions</td>
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<tr>
<td>Week 3</td>
<td>Decimals</td>
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<tr>
<td>Week 4</td>
<td>Percent</td>
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<tr>
<td>Week 5</td>
<td>Basic Statistics, Signed Numbers</td>
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<tr>
<td>Week 6</td>
<td>Exponents, Scientific Notation</td>
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<tr>
<td></td>
<td><strong>Exam(PAAE):</strong> Whole Numbers, Fractions, Decimals, Percents, Basic Statistics, Signed Numbers and Scientific Notation</td>
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<tr>
<td>Week 7</td>
<td>Algebraic Expressions, Translations. Solving Linear Equations and Inequalities</td>
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<tr>
<td>Week 8</td>
<td>Graphing Linear Equations and Inequalities</td>
</tr>
<tr>
<td>Week 9</td>
<td>Solving Systems of Linear Equations</td>
</tr>
<tr>
<td>Week 10</td>
<td>Exponents and Polynomials (includes scientific notation)</td>
</tr>
<tr>
<td>Week 11</td>
<td>Factoring Polynomials</td>
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<tr>
<td>Week 12</td>
<td>Rational Expressions</td>
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<tr>
<td>Week 13</td>
<td>Radical Expressions and Quadratic Formula</td>
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<tr>
<td>Week 14</td>
<td>Department Final Exam: Exam review</td>
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<tr>
<td>Week 15</td>
<td>CUNY-Wide Exam and second try of PAAE</td>
</tr>
</tbody>
</table>

**Outline of Topics**

**Arithmetic of Whole Numbers**
- Writing, rounding, adding, subtracting, multiplying, and dividing whole numbers.
- Estimating the sum, difference, products and quotients of whole numbers.
- Problems involving exponents, simple averages, and order of operations.
- Prime factorizations of whole numbers.
- Applied problems and word problems.

**Fractions**
- Forming, reducing, adding, subtracting, multiplying, dividing and comparing fractions.
- Converting between mixed numbers and improper fractions.
- Solving applied problems and word problems.

**Decimals**
- Writing, rounding, adding, subtracting, multiplying, dividing and comparing decimals.
- Converting between decimals and fractions.
- Solve applied problems and word problems.

**Percents**
- Writing and simplifying ratios and rates as fractions.
- Finding units rates and best buys.
- Setting up and solving proportion problems.
- Solving applied problems and word problems.
- Converting between decimals, percent and fractions.
- Solving percent problems, including application

**Basic Statistics**
- Finding the mean median, mode, and range of a given set of numbers.
- Reading and interpreting tables, line graphs, bar graphs and pie charts.
- Solving applied problems and word problems involving basic statistics and bar graphs.

Updated 8/14/12
Signed numbers (2nd section)
- Adding, subtracting, multiplying, dividing and comparing signed numbers.
- Determining absolute value.
- Completing word problems involving signed numbers.

Algebraic Expressions, Translations and Exponents
- Evaluating algebraic expressions via substitution.
- Adding, subtracting, multiplying, dividing and simplifying algebraic expressions.
- Using algebraic expressions to solve applied problems.

Scientific Notation (supplemental worksheet)
- Converting numbers between standard form and scientific notation.
- Adding, subtracting, multiplying, and dividing numbers in scientific notation.
- Solving applied problems and word problems.

Solving Linear Equations and Inequalities
- Solving linear and literal equations.
- Defining a linear equation in x and y using given information.
- Solving applied problems using linear equations in one variable.

Graphing Linear Equations and Inequalities
- Graphing the solution set of a linear inequality.
- Plotting points in the x-y plane.
- Graphing linear equations.
- Finding the slope of a line from given information.

Introduction to Functions. Notation.

Solving Systems of Linear Equations
- Solving systems of linear equations in 2 variables using graphical, substitution and elimination methods.
- Solving applied problems involving systems of equations.

Exponents and Polynomials
- Multiplying, dividing and simplifying expressions involving exponents.
- Adding, subtracting, multiplying, dividing and evaluating polynomials.

Factoring Polynomials
- Factoring polynomials using the greatest common factor and grouping.
- Factoring trinomials and difference of squares.
- Solving quadratic equations in one variable by factoring.
- Solving applied problems involving factoring.

Rational Expressions and Equations
- Simplifying rational expressions.

Radical Expressions and Equations
- Simplifying, adding, subtracting, multiplying and dividing radical expressions.