| **BOROUGH OF MANHATTAN COMMUNITY COLLEGE** |
| City University of New York |

Department of Mathematics

Basic Arithmetic and Algebra	**Class hours: 6**
MAT 12	**Instructor Information:**
Semester:	**Name:**
Credits: 0	**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 12.

Student Learning Outcomes and Assessment:

Course Student Learning Outcomes	Measurements
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.	**1.** Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.
2. Students should be able to correctly convert between a variety of real number types and formats.	**2.** Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.
3. Students should be able to make estimates and to check the reasonableness of solutions to calculations and problems involving real numbers.	**3.** Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.
4. Students should be able to solve applied word problems, including correctly setting up problems and translating between words and algebraic expressions and equations.	**4.** Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.
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.	**5.** Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.
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.	**6.** Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.

General Education Outcomes and Assessment:

General Education Learning Outcomes	Measurements
Communication Skills- Students will be able to write, read, listen and speak critically and effectively.	Homework, quizzes, online assignments, PAAE, final exam, MATH CUNY-Wide Exam.

Quantitative Reasoning- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.
Information & Technology Literacy- Students will be able to collect, evaluate and interpret information and effectively use information technologies.	Homework, quizzes, online problem assignments, PAAE, final exam, MATH CUNY-Wide Exam.

Required Text and Readings:
1) Geoffrey Akst and Sadie Bragg, *Basic Arithmetic and Algebra*, *Fourth Custom Edition*, *book package with MyMathLab access code*, Pearson Custom Publishing, 2012 ISBN # 9781269903530.

OR 2) Stand-alone MyMathLab access code with eBook (Code: 9781269899734) .

Math Lab Use: The Math Lab is located in S535. 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 **MyMathLab** 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. **MyMathLab** can be accessed on any computer that has internet access.

Registering for MyMathLab: Before registering, you will need the following information:
1. E-mail address: Your professor will communicate with you via this address.
2. Course ID: Your course ID will be given to you by your instructor.
3. Access Code: The required access code comes either with your book or by itself at your bookstore. Alternatively, you can buy instant access with a credit card or PayPal account during registration.

Once you have this information, you may register by following the directions below:

1. Go to **www.pearsonmylabandmastering.com**.

2. Under the large **Register** section on the right side of the page, and click the **Student** button.

3. Read the onscreen instructions and click **OK! Register now.**

4. Next, enter the **Course ID** for your course.

5. After this, either **Create** a new Pearson username and password, or, if you've already registered for another Pearson product (i.e. MyStatLab), **Sign In** with that username and password.

6. On the next page, click the **Access Code** button if you purchased a package with an access code from the bookstore, OR purchase instant access now by clicking on the purchase options under the **Use a Credit Card or PayPal** section.

7. You are now registered! Now, it's time to sign. Go to **www.pearsonmylabandmastering.com** and click the **Sign In** button in the top right. Enter your username and password.

Evaluation and Requirements of Students:
- The final grade in this course will be a passing grade of **S**, or a failing grade of **R**.
- **To pass the course, students must have an overall average of 70% or higher.**
- A passing grade for the Departmental Pre-Algebra Assessment Exam (PAAE) is **70% or higher**. A passing score for the Departmental Final Exam is **70% or higher**. A passing score for the CUNY Exam is **60% or higher.**
- If you fail the first try of the PAAE Exam, you are required to complete each of the online Intervention Assignments (on **MyMathLab**) with a score of **70% or higher on each.**
- If you failed the first try of the PAAE, you <u>must</u> take the second try of PAAE during Finals Week. (Regardless of your intervention scores)

If you passed the PAAE with a 70% or higher you are exempt from the Intervention Assignment requirement, but are **strongly** encouraged to do those assignments for extra 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 PAAE. These assignments are an **excellent** way to prepare for the Final and CUNY-Wide Exams.

Grade Distribution:
REQUIRED

PAAE:	**20 %**
CUNY Exam (CEAFE):	**35 %**
Departmental Final:	**20 %**
Homework and Quizzes:	**25 %**

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 of assigning a "WU" or "R" grade.
2. Class Attendance

- Attendance in both regular and remedial courses is mandated by policy of the City University of New York.
- Once classes begin, you must officially drop or withdraw from a course that you no longer want to attend before the deadlines (check the Academic Calendar for specific dates). *

Please Note: If you do not take action on the course, you will receive a grade of "WU or WN" (based on attendance). If the Office of the Registrar assigns a WN (which means you never attended the class during the first week of classes), you are still 100% liable for the tuition. However, if you stop attending at any time during the term then you should receive a grade of WU (Withdrew Unofficially-same as an "F" grade) which counts as a failure in your GPA and may have financial repercussions.

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 Accessibility. 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. For further information on integrity and behavior, please consult the college bulletin (also available online).

Suggested Schedule:

Week 1	Arithmetic of Whole Numbers		Week 9	Solving Systems of Linear Equations
Week 2	Fractions			
Week 3	Decimals		Week 10	Exponents and Polynomials (includes scientific notation)
Week 4	Percent			
Week 5	Basic Statistics, Signed Numbers			
Week 6	Exponents, Scientific Notation **Departmental Pre-Algebra Assessment Exam(PAAE): Whole Numbers, Fractions, Decimals, Per cents, Basic Statistics, Signed Numbers and Scientific Notation**		Week 11	Factoring Polynomials
			Week 12	Rational Expressions
			Week 13	Radical Expressions
Week 7	Algebraic Expressions, Translations. Solving Linear Equations and Inequalities		Week 14	**Department Final Exam**; Exam review
			Week 15	**CUNY-Wide Exam and second try of PAAE**
Week 8	Graphing Linear Equations and Inequalities			

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.

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.
- 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.

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.
- Solving rational equations.

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