BOROUGH OF MANHATTAN COMMUNITY COLLEGE
City University of New York

Department of Mathematics

Mathematics for Respiratory Therapy
MAT 109
Credits: 3

Class hours: 3
Instructor Information
Office:
Phone:
Email:
Office Hours:

Course Description
This course covers intermediate algebraic topics and emphasizes problems and applications in respiratory therapy. It includes such topics as algebraic representation, factoring, approximate number, significant digits, scientific notation, first and second degree equations with applications, ratio and proportions, square roots, radicals and exponents, logarithms, graphing linear equations, vectors and the metric system.

Prerequisites/Co-requisites
Exemption or completion of math remedial course including elementary algebra (MAT 012 or MAT 051)

Student Learning Outcomes
Upon completion of this course, students will be able to:

- Identify different types of errors, compute relative and absolute error
- Solve applied problems and operate on numbers using scientific notation and significant figures
- Convert basic units – (liters and grams)
- Simplify and factor polynomial and rational expressions
- Solve linear, literal, quadratic and rational equations, as well as set up and solve basic proportions involving direct and inverse variations
- Calculate the gram-molecular weight, density of gasses, new volume, pressure, or temperature of a gas when the initial values are known (using various gas laws)
  Calculate an individuals inspiratory flow rate, the flow rate delivered by air entrainment oxygen devices, and determine whether the flow rate from a system is adequate for a given patient
- Simplify rational exponents and radical expressions
- Express logarithmic equations as exponential equations, solve basic equations involving logarithms, and simplify logarithmic expressions
- Solve a right triangle using trigonometric functions and convert between radians and degrees
- Add parallel and perpendicular vectors, as well as basic vectors using a geometric method
- Find the slope, intercept, equation, and graph of basic linear equations

Required Text & Readings
1. *Basic Mathematics with Applications to Science and Technology: Schaum's Outline Series,* 1973, Hayam Kruglak and John T. Moore.

2. *Practical Math for Respiratory Care: A Text and Workbook,* Raymond Sibberson,1996, Mosby Publishing Co.

Evaluation & Requirements of Students
At the beginning of the semester, the instructor will advise the students of the determination of the final grade. Students are required to attend all scheduled classes.

Outline of Topics	Text*	Chapter	Pages
I. Measurement and Scientific Notation	BM	29 – 18	
II. Math Concepts	PM	11 – 3	
III. Review of Basic Algebra			
Essential of Algebra	BM	5	52 – 63
Math Concepts	PM	1	4 – 12
Ratio and Proportion	BM	6	82 – 84
Gas Laws	PM	2	13 – 33
Linear Equations	BM	7	93 – 100
Flow Rates	PM	4	47 – 57
IV. Exponents and Radicals	BM	8	110 – 118
V. Logarithms	BM	9	146 – 150
VI. Quadratic Equations and Square Roots	BM	10	176 – 178
VII. Trigonometry			
Trigonometric Functions	BM	13	243 – 246
Solutions of Triangles	BM	14	256 – 257
Radian Measure	BM	16	290 – 291
VIII. Vectors	BM	15	272 – 275
Additional Topics in Respiratory (Optional)			
Drug Doses	PM	6	69 – 79
Humidity	PM	7	80 – 93
Oxygen Content	PM	9	103 – 111
Cardiac Output	PM	14	189 – 199
Hemodynamics	PM	16	214 – 232

***BM = Basic Mathematics with Applications to Science and Technology PM = Practical Math for Respiratory Care**

College Attendance Policy
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 example, you may be enrolled in a three-hour class. In that class, you would be allowed 4 hours of absence (not 4 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

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 side, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).