

BOROUGH OF MANHATTAN COMMUNITY COLLEGE

City University of New York

Department of Mathematics

Title of Course: Intermediate Algebra and Precalculus

Course: MAT 206.5

Semester:

Credits: 4

Class hours: 8

Instructor:

Tel #:

Office:

Email:

Course Description: This course integrates Intermediate Algebra and Trigonometry with Precalculus. Topics include properties of real numbers, operations with polynomials and factoring polynomials, equations and inequalities in one and two variables, systems of linear equations, rational expressions and functions, rational exponents and roots, quadratic and polynomial functions, exponential and logarithmic functions, trigonometric and inverse trigonometric functions.

Prerequisites: Elementary Algebra (MAT 51 or MAT 12) or the equivalent with departmental approval or placement into Intermediate Algebra (MAT 56).

MAT 206.5 Course Designation

MAT 206.5 is an accelerated course that integrates Intermediate Algebra and Trigonometry (MAT 56) with Precalculus (MAT 206). Students who have passed MAT 56, MAT 56.5, or MAT 206 are not eligible to enroll in MAT 206.5.

Student Learning Outcomes:

Course Student Learning Outcomes	Measurements
1. Students will solve applied word problems, including correctly setting up problems and translating between words and algebraic expressions and equations.	1. Assignments and projects; class exams; final exam
2. Students will perform operations and solve equations involving algebraic and transcendental expressions in the real numbers, including polynomial, rational, radical, exponential, logarithmic, and trigonometric expressions and equations, linear inequalities, and systems of equations.	2. Assignments and projects; class exams; final exam
3. Students will represent equations in the real numbers graphically, and translate between graphical and algebraic forms, and use both graphical and algebraic forms to solve problems.	3. Assignments and projects; class exams; final exam
4. Students will graph, interpret, and analyze linear, quadratic, and other higher order polynomial functions.	4. Assignments and projects; class exams; final exam
5. Students will understand quadratic and rational functions and the properties associated with their graphs.	5. Assignments and projects; class exams; final exam
6. Students will understand transcendental functions, their graphs, and properties.	6. Assignments and projects; class exams; final exam

7. Students will verify trigonometric identities and solve trigonometric equations.	7. Assignments and projects; class exams; final exam
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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.	Assignments and projects; exams and midterm exam; final exam
Quantitative Reasoning- Students will be able to use quantitative skills and the concepts and methods of mathematics to solve problems.	Assignments and projects; exams and midterm exam; final exam
Information & Technology Literacy- Students will be able to collect, evaluate and interpret information and effectively use information technologies.	Assignments and projects; exams and midterm exam; final exam

Required Text: PreCalculus, tenth edition; Roland E. Larson; Houghton Mifflin Company, Boston, Massachusetts, 2018

Other Requirements: TI-30x calculator (or equivalent scientific calculator) and Web Assign (if required by instructor). Graphing calculators and cell phone calculators are not allowed.

Math Lab Use: The Math Lab is located in S535. It is dedicated to helping students improve their understanding of mathematics at any level. You will need a valid BMCC student ID to visit the Math Lab. Tutoring is free and available for all BMCC math students. The Math Lab has practice problem hand-outs, as well as computer- and video-based tutoring. Students may be required to attend tutoring in the Math Lab. Current hours and more information about the Math Lab can be found at <http://www.bmcc.cuny.edu/mathlab/>

Learning Resource Center (LRC)

To help make your college career a success, the Learning Resource Center (LRC) offers students' academic support to strengthen academic skills and meet their learning needs. LRC offers tutorials and instructional computer lab services and course-specific, non-print supplemental instructional materials. The LRC is located in room S510 and all services are available free of charge to registered BMCC students. For more info, visit <http://www.bmcc.cuny.edu/lrc/>

E-Tutoring

E-tutoring is available to all BMCC students. If you email your question, you will receive a response within 24 hours Monday to Friday except when classes are not in session. Questions submitted over the weekend, if not answered within 24 hours, will be answered on the following Monday. For further information, please call e-tutoring at 212-220-1380, send an email to e-tutoring@bmcc.cuny.edu or visit <http://www.bmcc.cuny.edu/elearning/>

Evaluation & Requirements of Students: The overall course grade will include a cumulative departmental final examination worth at least 30% of the final grade and any other criteria specified by the instructor. The other criteria can include class work, examinations, quizzes, projects, and/or class participation. A scientific calculator will be permitted on the final examination. Calculator use on any other quizzes or exams is at the discretion of the instructor. In order to pass the course, students must receive a passing grade overall.

Suggested Grade Distribution:

Final Examination	30%
Midterm	15%
Tests	30%
Homework	15%
Quizzes/Participation	10%

If a student does not pass the course, he/she can still satisfy the MAT 56 requirement by receiving a 70% or higher on the MAT 56 final exam. Students who receive 70% or higher on the MAT 56 final exam will be placed into MAT 206. The MAT 56 final exam will be offered after the MAT 206.5 final exam is given.

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 this course, each student is allowed nine hours of absence (not nine days). In the case of excessive absence, the instructor has the option to lower the grade or assign a WU or F grade.

Classes begin promptly at the time 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 Accommodations

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with 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.

Outline of Topics:

FUNCTIONS AND THEIR GRAPHS

Lesson	Name of Lesson	Section in Textbook
1	Solving Equations	A.5 pgs. A45 – A57
2	Solving Absolute Value Equations	A.5 pgs. A45-57, supplement
3	Solving Linear Inequalities and Compound Inequalities	A.6 pgs. A58 – A66
4	Absolute Value Inequalities	A.6 pgs. A58 – A66
5	Rectangular Coordinates	1.1 pgs. 2 – 10
6	Graphs of Equations	1.2 pgs. 13 – 21
7	Linear Equations in Two Variables	1.3 pgs. 22 – 34
8	Function Notation	1.4 pgs. 35– 48
9	Transformations of Functions/Graphs of Absolute Value Equations	Supplement, 1.5 pgs. 49 – 59
10	Systems of Equations and Applications	7.1, 7.2 pgs. 468-477, 478-489

POLYNOMIAL FUNCTIONS

11	Factoring (trinomials and special polynomials)	A.3 pgs. A25-A34
12	Complex Numbers	2.4 pgs. 145 – 151
13	Solving quadratics by factoring, completing and quadratic formula	A.5 pgs. A45– A57
14	Quadratic Functions/Transformations of Quadratic Functions	2.1 pgs. 114– 122
15	Polynomial Functions of Higher Degree/Cubic Functions and their Transformations	2.2 pgs. 123 – 135
16	Division of Polynomials and the Remainder and Factor Theorems	2.3 pgs. 136 – 144
17	Zeros of Polynomials	2.5 pgs. 152– 165

RATIONAL EXPONENTS

18	Properties of Exponents	A.2 pgs. A13 – A24
19	Rational Exponents	A.2 pgs. A13 - A24
20	Simplified Form for Radicals	A.2 pgs. A13 – A24
21	Addition and Subtraction of Radical Expressions	A.2 pgs. A13- A24
22	Multiplication of Radical Expressions	Supplement
23	Division of Radical Expressions	A.2 pgs. A13 – A24
24	Solving Radical Equations	A.5 pgs. A45 - A57

RATIONAL FUNCTIONS

25	Rational Expressions	A4 pgs. A35 - A44
26	Multiplication and Division of Rational Expressions	A4 pgs. A35 - A44
27	Addition and Subtraction of Rational Expressions	A4 pgs. A35 - A44
28	Complex Fractions	A4 pgs. A35 – A44
29	Solving Rational Equations	A5 pgs. A45 – A57
30	Graphs of Reciprocal Function and Transformations	1.6 pgs. 60 - 66
31	Rational Functions	2.6 pgs. 166-177
32	Partial Fractions	7.4 pgs. 502 – 509
33	Variation	1.10 pgs. 93 - 103

EXPONENTIAL AND LOGARITHMIC FUNCTIONS

34	Algebra of Functions and Function Composition	1.8 pgs. 76 – 83
35	Inverse Functions	1.9 pgs. 84 – 92
36	Exponential Functions	3.1 pgs. 198 - 208
37	Logarithmic Functions	3.2 pgs. 209 – 218
38	Properties of Logarithms	3.3 pgs. 219 – 225
39	Exponential and Logarithmic Equations	3.4 pgs. 226 – 235

TRIGONOMETRY

40	Radian and Degree Measure	4.1 pgs. 260 – 269
41	Trigonometric Functions: The Unit Circle	4.2 pgs. 270 – 276
42	Right Triangle Trigonometry	4.3 pgs. 277 – 287
43	Trigonometric Functions of Any Angle	4.4 pgs. 288 – 296
44	Graphs of Sine and Cosine Functions	4.5 pgs. 297 – 307
45	Graphs of Other Trigonometric Functions	4.6 pgs. 308 – 317
46	Inverse Trigonometric Functions	4.7 pgs. 318 - 327

ANALYTIC TRIGONOMETRY

47	Using Fundamental Identities	5.1 pgs. 348 – 354
48	Verifying Trigonometric Identities	5.2 pgs. 355– 362

49	Solving Trigonometric Equations	5.3 pgs. 363 – 373
50	Sum and Difference Formulas	5.4 pgs. 374 – 380
51	Multiple-Angle and Product-to-Sum Formulas	5.5 pgs. 381 – 389

Rev 01/2019