

**COURSE SYLLABUS**

MAT 120 Intermediate Algebra

**2019-2020**

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**Materials:** Intermediate Algebra: Concepts with Applications (McKeague), 1 ½ to 2 in binder, loose leaf paper, dividers, pens and pencils, highlighters, TI­84 Graphing Calculator

**Course Description**

**MAT 120 Intermediate Algebra 4 s.h**.

This course is designed for students who have had a minimum of high school mathematics and wish to enroll later in MAT 130 or MAT 140. Topics include: absolute value equations and inequalities; second degree (quadratic) equations, inequalities, graphs, and applications; relations and functions; rational expressions, equations, inequalities, and applications; radical expressions and equations; and complex numbers. *Not open to students who have a “B” or better in Algebra 2 and Trigonometry or its equivalent. Not open to students who have taken Precalculus or higher.* Prerequisite: Grade of “C” or above in MAT 040, placement by academic advisor, or permission of Instructor. Hours of class per week: 4. General Education: M.

**Course Student Learning Outcomes**

Students will be able to:

* Solve quadratic (second degree) equations and inequalities in one variable and their applications.
* Graph quadratic functions and solve their applications.
* Perform operations and solve equations, inequalities, and applications involving rational expressions.
* Perform operations and solve equations involving radicals.

**SUNY General Education Mathematics Course Learning Outcomes**

 Students will demonstrate the ability to:

* interpret and draw inferences from mathematical models such as formulas, graphs, tables and schematics;
* represent mathematical information symbolically, visually, numerically and verbally;
* employ quantitative methods such as, arithmetic, algebra, geometry, or statistics to solve problems;
* estimate and check mathematical results for reasonableness; and
* recognize the limits of mathematical and statistical methods.

**Student Responsibilities**

1. **Exams:**

There will be multiple exams throughout the course.

* Exam 1 will cover Chapters 0 and 1.
* Exam 2 will cover Chapter 2
* Exam 3 will cover Chapter 3
* Exam 4 will cover Chapter 4 and 7
* Exam 5 will cover Chapter 5
* Exam 6 will cover Chapter 6
* Exam 7 will cover Chapter 8
* Exam 8 will cover Chapter 9
* Exam 9 will cover Chapter 10 and additional material as permitted by the instructor (if time permits)

Exam dates will be announced in class. Extra credit will be given for students receiving an ‘A’, ‘B’, or ‘C’ on any test. A student will receive 5 points for an ‘A’, 3 points for a ‘B’, and 1 additional point for a ‘C’. These additional points will be added directly to that exam score. If a student misses a test due to an absence, **the student has two days to make up the missed test.**

1. **Midterm and Final Exam-**

There will be a midterm given in January during Regents Week and a final exam given in June during Regents Week. Both exams will be cumulative and worth 100 points each. The final course grade will be determined by whichever is higher, the overall course grade or the average of the midterm and final exam grade. For example, if your overall course grade is a 75 and you earn a 90 average on the midterm and final, then your final course grade will be a 90.

1. **Homework-**

Homework will be assigned at the end of every class and will be discussed during the next class session. The homework will be collected at the instructor’s discretion. Most quizzes will follow exactly from the homework problems. You should plan to complete each assignment. Homework should be thought of as a practice in order to learn the material and to do well on quizzes and exams.

1. **Quizzes-**

There will be multiple quizzes given throughout the school year with one being about every other week. Quizzes will be announced ahead of time. If a student misses a quiz due to an absence, **the student has two days to make up the missed quiz.**

1. **Cell Phones, Laptops, and Electronic Devices-**

These are not needed nor permitted in class. Please turn off all devices and store them away during each class session. CELL PHONES ARE NOT TO BE USED FOR CALCULATORS. If you have a cell phone out during a quiz or exam, it will be considered cheating, and you will receive a zero on that quiz or exam. The first offense for violating this rule will be a verbal warning. If there is a documented reason for a laptop, you must first provide the documentation.

1. **Common Courtesies-**
* Talk to your friends before or after class but not during.
* No headphones are to be worn in class.
* Arrive on time with paper, textbook, calculator and all electronics turned off.
1. **Extra Help-**

I am available third and seventh period in A105. If before class or after school help is needed, please let me know immediately. We can arrange a time that works for both of us.

**Course Content and Outline**

Chapter 0 Real Numbers and Algebraic Expressions

0.1 The Real Numbers

0.2 Properties of Real Numbers

0.3 Arithmetic with Real Numbers

0.4 Exponents and Scientific Notation

Chapter 1 Linear Equations and Inequalities in One Variable

1.1 Linear Equations

1.2 Formulas

1.3 Applications

1.4 Interval Notation and Linear Inequalities

1.5 Sets and Compound Inequalities

1.6 Absolute Value Equations

1.7 Absolute Value Inequalities

Chapter 2 Graphs of Equations, Inequalities, and Functions

2.1 Graphs of Equations

2.2 Introduction to Functions

2.3 Function Notation

2.4 Algebra and Composition with Functions

2.5 Slope and Average Rate of Change

2.6 Linear Functions

2.7 Linear Inequalities

Chapter 3 Systems of Equations

3.1 Solving Linear Systems

3.2 Systems of Linear Equations in Three Variables

3.3 Matrix Solutions to Linear Systems

3.4 Determinants and Cramer's Rule

3.5 Applications of Systems of Equations

3.6 Systems of Linear Inequalities and Applications

Chapter 4 Exponents and Polynomials

4.1 Sums and Differences of Polynomials

4.2 Multiplication of Polynomials

4.3 Greatest Common Factor and Factoring by Grouping

4.4 Factoring Trinomials

4.5 Factoring Special Products

4.6 Factoring: A General Review

4.7 Solving Equations by Factoring

Chapter 7 Quadratic Equations and Functions

7.1 Completing the Square

7.2 The Quadratic Formula

7.3 The Discriminant and Multiplicity

7.4 Equations Quadratic in Form

7.5 Graphing Quadratic Functions

7.6 Polynomial and Rational Inequalities

Chapter 5 Rational Expressions, Equations, and Functions

5.1 Basic Properties and Reducing to Lowest Terms

5.2 Multiplication and Division of Rational Expressions

5.3 Addition and Subtraction of Rational Expressions

5.4 Complex Rational Expressions

5.5 Rational Equations

5.6 Applications

5.7 Division of Polynomials

5.8 Variation

Chapter 6 Rational Exponents and Radicals

6.1 Rational Exponents

6.2 Simplifying Radicals

6.3 Addition and Subtraction of Radical Expressions

6.4 Multiplication and Division of Radical Expressions

6.5 Radical Equations and Functions

6.6 Complex Numbers

Chapter 8 Exponential and Logarithmic Functions

8.1 Exponential Functions and Applications

8.2 Inverse Functions

8.3 Logarithmic Functions and Applications

8.4 Properties of Logarithms

8.5 Common and Natural Logarithms with Applications

8.6 Exponential Equations, Change of Base, and Applications

Chapter 9 Conic Sections

9.1 Circles

9.2 Parabolas

9.3 Ellipses

9.4 Hyperbolas

9.5 Nonlinear Systems of Equations and Inequalities

**Chapter 10 Sequences and Probability Available Online**

10.1 Sequences and Recursion Formulas

10.2 Series

10.3 Arithmetic Sequences

10.4 Geometric Sequences

10.5 The Binomial Expansion

10.6 Permutation and Combinations

10.7 Introduction to Probability

10.8 Events

**Grading Method**

Numerical grades will be calculated by a weighted scale:

* Homework 15%
* Quizzes 35%
* Tests 50%

Final course grade will be determined by the higher average between the exams and quizzes versus the midterm and final exam.

**Grading Scale**

|  |  |
| --- | --- |
| A | 94-100 |
| A- | 90-93 |
| B+ | 87-89 |
| B | 84-86 |
| B- | 80-83 |
| C+ | 77-79 |
| C | 70-76 |
| D | 60-69 |
| F | 0-59 |

**Attendance Policy**

JHS allows late work to be turned in within two days after the last day of absence. If you miss class, it is your responsibility to get any missed work. Anyone attaining perfect attendance for each quarter will receive 5 extra credit points added to their final points total for the class.

# Academic Integrity Policy:

Academic integrity refers to a code of values that support and direct the education process. This code is based on legal, ethical, and educational concerns. Education in large part consists of the acquisition and demonstration of knowledge according to acceptable standards. Students must be familiar with these standards and will be held accountable for their use. Not being familiar with these standards is not an excuse for their breach. <http://www.fmcc.edu/academics/programs/academic-integrity-policy/>

# Campus Civility Statement:

FM is committed to fostering an environment of civility. All members of the FM community and visitors have the right to experience and the responsibility to create and maintain an environment of mutual respect and support that is civil in all aspects of human relations. Civility facilitates professional growth and achievement and promotes an environment where each person can reach his or her full potential.