21622.201720

## Course Number: MATH 0310.S07

Course Title: Intermediate Algebra

**Course Description:** A study of relations and functions, inequalities, algebraic expressions and equations (absolute value, polynomial, radical, rational), with a special emphasis on linear and quadratic expressions and equations. Lab Included.

**Course Credit Hours:** 3

Lecture Hours: 3

Lab Hours: 1 (included)

**Placement Assessment:** Placement in Math 0310. Consult the Testing Center Director if you have questions about an assessment level OR Successful completion of Mathematics 0305 or 0406.

**Prerequisite:** Successful completion of Math 0305 or MATH 0406, or TSI standard for MATH 0310; or equivalent.

**Student Learning Outcomes:** Upon successful completion of this course, students will:

1. Define, represent, and perform operations on real and complex numbers.
2. Recognize, understand, and analyze features of a function.
3. Recognize and use algebraic (field) properties, concepts, procedures (including factoring), and algorithms to combine, transform, and evaluate absolute value, polynomial, radical, and rational expressions.
4. Identify and solve absolute value, polynomial, radical, and rational equations.
5. Identify and solve absolute value and linear inequalities.
6. Model, interpret and justify mathematical ideas and concepts using multiple representations.
7. Connect and use multiple strands of mathematics in situations and problems, as well as in the study of other disciplines.

**Withdrawal Policy: March 17, 2017** islast day to withdraw from this class.

**Collin College Academic Policies:** Every member of the Collin Community is expected to maintain the highest standards of academic integrity. All work submitted for credit is expected to be the student’s own work.

**Americans with Disabilities Act:** Collin College will adhere to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal opportunity. It is the student’s responsibility to contact the ACCESS office to arrange for appropriate accommodations. SCC: D-140 or 972.881.5898 (V/TTD: 972.881.5950))

Instructor Information

**Instructor’s Name:** Arlene Bakner

**Office Number:** J 237

**Office Hours:** Monday, Wednesday 11 AM-12:45 PM, Tuesday, Thursday 1:15-2:30 PM, other times by appointment

**Phone Number:** (972) 881-5924

**Email:** [abakner@collin.edu](mailto:abakner@collin.edu) (Email messages will be read and responded to Monday, Wednesday 10 AM- 3:45 PM, Tuesday, Thursday 8:30 AM-3:45 PM, Friday 10 AM-12 noon except when in class or attending a meeting)

**Class Information**:

**Section Number:** S07

**Meeting Times:** Monday, Wednesday 1-2:15 PM

**Meeting Location:** BB 121

**Administrative Withdrawal:** Participation in class is an essential requirement of this course. Maintain contact with your professor if you are not able to attend class or complete an assignment on time. If you miss more than 20% (4 classes) of the meetings of a Developmental Education class between the beginning of class and the college withdrawal date, March 17, 2017, you may be administratively withdrawn from this class. Administrative withdrawal may have academic, financial, financial aid, and visa implications. It will count toward Collin’s Repeat Policy and the 27-hour limitation on Developmental Education courses. Administrative withdrawal will take place after the full refund period, and if you are administratively withdrawn from the course you will not be eligible for a tuition refund. If you have questions about the administrative withdrawal policy, please contact your professor.

**College Repeat Policy:** Beginning Fall 2016, Texas residents attempting a course more than twice at Collin College are subject to regular tuition plus an additional $50 per semester credit hour. Undergraduate courses attempted at Collin with a graded status of A, B, C, D, F, I, W (withdrawals *after* census), and AU will be evaluated for repeat limits.

Developmental Education (DE) courses are exempt from the additional tuition charge until the 27 hour threshold is met. Students in excess of 27 Developmental Education hours will be assessed the authorized $50 per hour additional tuition.

If you drop this class before census day (January 30, 2017), it will not count against you.

**Scholastic Dishonesty:** For a full description of scholastic dishonesty see the student code of conduct in the Student Handbook.  Disciplinary proceedings will be initiated against a student found guilty of scholastic dishonesty. Scholastic dishonesty may involve general scholastic dishonesty, cheating, collusion, scholastic dishonesty conduct through electronic or computerized means. The instructor will determine the appropriate academic penalty.

**Course Resources:** The College provides group tutoring and a Math Lab at no charge at each campus to support student success in this class. The Math Lab locations are below.

Central Park Campus: C220 Phone: 972.548.6896

Preston Ridge Campus: F148 Phone: 972.377.1639

Spring Creek Campus: D203 Phone: 972.881.5921

*Please see:* [*http://www.collin.edu/collegesurvival/*](http://www.collin.edu/collegesurvival/)*for a listing of available college support resources.*

**Textbook:**

The MyMathLab (MML) Integrated Course Sequence code is **REQUIRED**.

The Barnes & Noble bookstore on each campus provides the following purchasing options:

1. MyMathLab (MML) Integrated Course Sequence code - **ISBN # 9780321757371**
   * This code will include access to the eText version of Bittinger and Beecher’s *Algebra Foundations: Basic Math, Introductory and Intermediate Algebra*.
2. Bittinger and Beecher *Algebra Foundations: Basic Math, Introductory and Intermediate Algebra* - **ISBN # 9780133862324**
   * This is a bundle including the loose leaf textbook and MyMathLab code.

\*\* The MML code available in the bookstore provides full access for all 3 courses in the Developmental Math sequence.

**Supplies:**  A graphing calculator is required and the TI 83, TI 83 Plus, or TI 84 is preferred. Calculators with a computer algebra system (CAS) will not be permitted on exams, unless prior approval is obtained from the instructor. Bring to class a graphing calculator, paper or notebook, and a pencil.

**Attendance Policy:** Attendance is expected every class. Attendance means arriving to class on time and remaining in class for the entire session. If there are zero absences, zero days of being tardy, zero days of leaving class early during each test interval, then two points will be added to that test score.

“Students are responsible for all material and assignments for a missed class.”

**Electronic Devices Policy:** As per Section 6.1 Academic Etiquette and the College Experience (pg. 41, paragraph 3) of the *Collin* *Student Handbook* with the exception of a calculator, all electronic devices are to be switched off during class, unless an exception is obtained from the instructor in advance. If you have an emergency situation, then leave the classroom quietly. **Lap top computers and other individual electronic equipment will not be used in the classroom during class.**

**Course Requirements:** Attend class as scheduled and complete the required tests, lab assignments, and final examination, and any other assignments required by the instructor. Assignments are to be completed using My Math Lab designated problems. These problems must be completed on or before midnight (My Math Lab Time) the test day (listed on the schedule) with a 70% or greater in order to receive full credit. Otherwise half credit will be awarded if My Math Lab designated problems are completed after midnight (My Math Lab Time) the test day (listed on the schedule) or if the Math Lab designated problems have a score less than 70%.

**Method of Evaluation:** Only AD, BD, CD, FD or I can be awarded in this class. **A grade of DD will never be awarded.**

The **Grading Scale** will be: AD: 90 – 100%; BD: 80 – 89%; CD: 70 – 79%; FD: 0 – 69%.

**Tests** – (55%) Four tests will be given. Each test is awarded a percentage grade. There are **no** **makeup** tests.The schedule shows the date for each of the four tests.

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**Lab exercises** –(15%) Students will complete 10 Labs on the MyMathLab website. Each lab will have a practice lab, which contains 15 questions. Labs 2 through 9 will contain problems from both the current section and previous sections (See chart below). Students have unlimited chances to take the practice lab; however, there is only one chance for the actual Lab Quiz. The Lab Quiz due dates are listed on the suggested schedule on or before midnight (My Math Lab Time) the test day. Each day a Lab Quiz is late **five percentage points will be deducted including weekends.** The URL, instructions for enrolling, and the required course ID will be provided in a separate document.

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| **Lab#** | **Practice Lab and Main Lab Sections Covered** | |
| **1** | **ALL REVIEW of Beginning Algebra**:  10.2 12.4 13.8 17.3  11.4 13.2 14.1 17.4  11.7 13.4 14.2  12.3 13.5 14.5 | |
|  | Current Sections | Previous Sections |
| **2** | 12.3 16.2  16.1 Appendix D | 13.1 14.5  13.2 17.2  13.5 |
| **3** | 14.7  14.8  18.3 | 11.7 Appendix D  13.5  14.7 |
| **4** | 15.1 15.3  15.2 15.4 | 14.7 18.3  16.2 |
| **5** | 15.5 15.7  15.6 15.8 | 15.1 16.1  15.4 18.3 |
| **6** | 19.1 19.3, Obj. A & B 19.2 19.4 | 15.3 15.6  15.4 16.1  15.5 |
| **7** | 19.5  19.6  19.8 | 19.1  19.3  19.4 |
| **8** | 20.1  20.2  20.3 | 19.3, Obj. B 19.8  19.5  19.7 |
| **9** | 20.5  20.6  20.7 | 15.2 20.5  20.1  20.2 |
| **10** | **ALL REVIEW**:  14.8 15.7 19.2 20.6  15.1 16.2 19.3 20.7  15.5 18.3 19.6 Appendix D  15.6 19.1 20.3 | |

**Homework**-(10%) Assignments are to be completed using My Math Lab designated problems. These problems must be completed on or before midnight (My Math Lab Time) the test day (listed on the schedule) with a 70% or greater in order to receive full credit. Otherwise half credit will be awarded if My Math Lab designated problems are completed after midnight (My Math Lab Time) the test day (listed on the schedule) or if the Math Lab designated problems have a score less than 70%.

**Final exam** –(20%) A comprehensive departmental final exam is REQUIRED for all students at the end of the course (NO EXCEPTIONS). If the exam is not taken, a zero will be recorded. No other grade can replace the final exam.

The instructor reserves the right to make changes to this syllabus during the semester. Changes will be provided in writing during class hours.

***Expectation: Maintaining a positive learning environment***

*As your instructor and as a student in this class, it is our shared responsibility to develop and maintain a positive learning environment for everyone. Your instructor takes this responsibility very seriously and will inform members of the class if their behavior makes it difficult for him/her to carry out this task. As a fellow learner, you are asked to respect the learning needs of your classmates and assist your instructor achieve this critical goal.*

***Creating Opportunities for Learning***

*As your instructor, it is my responsibility to present learning opportunities through the course syllabus, lectures, labs, in-class and out-of-class exercises and assignments.*

*It is your responsibility to do the learning by completing the readings, by attending class and by participating in the class discussions and assessment/lab exercises.*

***Tracking Your Success at Learning***

*Your instructor will conduct quizzes, exams and assessments that you can use to determine how successful you are at achieving the course learning outcomes (mastery of course content and skills) outlined in the syllabus.*

*If you find you are not mastering the material and skills, you are encouraged to reflect on how you study and prepare for each class. Your instructor welcomes a dialogue on what you discover and may be able to assist you in finding resources on campus that will improve your performance.*

**Tentative Course Calendar:**

Math0310.S07

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|  | **Math 0310 (Bittinger, 1e)** | **0310 Labs** |
| **1/18** | Syllabus, Introductions  12.2 Graphing Linear Equations | Register for My Math Lab |
| **1/23** | 12.3 More with Graphing and Intercepts  16.1 Functions and Graphs  **Supplement: Relations and Table of Values** | **Assign Practice Lab 1**  (Review) |
| **1/25** | 16.2 Finding Domain and Range  Appendix D The Algebra of Functions | **Assign Practice Lab 2**  **(12.2, 12.3, 16.1, 16.2, Appendix D)** |
| **1/30** | **Supplement: Evaluate an Absolute-Value Expression**  18.3 Absolute-Value Equations and Inequalities  Review |  |
| **2/1** | **Test 1 (Chapters 12, 16, 18)** | **Lab Quiz 1, Lab Quiz 2 due** L |
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| **2/6** | 14.7 Factoring: A General Strategy  14.8 Solving Quadratic Equations by Factoring | **Assign Practice Lab 3**  **(18.3,14.7, 14.8)** |
| **2/8** | 15.1 Multiplying and Simplifying Rational Expressions |  |
| **2/13** | 15.2 Division and Reciprocals  15.3 Least Common Multiples and Denominators |  |
| **2/15** | 15.4 Adding Rational Expressions  15.5 Subtracting Rational Expressions | **Assign Practice Lab 4**  **(15.1, 15.2, 15.3, 15.4)** |
| **2/20** | 15.6 Complex Rational Expressions |  |
| **2/22** | 15.7 Solving Rational Equations |  |
| **2/27** | 15.8 Applications Using Rational Equations and Proportions (Objective A only)  Review | **Assign Practice Lab 5**  **(15.5, 15.6, 15.7, 15.8)** |
| **3/1** | **Test 2 (Chapters 14, 15)** | **Lab Quiz 3, Lab Quiz 4, Lab Quiz 5 due** |
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| **3/13** | 19.1 Radical Expressions and Functions  **Supplement: Determine the Domain of Radical Functions when the index is greater than 2** |  |
| **3/15** | 19.2 Rational Numbers as Exponents |  |
| **3/20** | 19.3 Simplifying Radical Expressions (Objective A)  **Supplement: Using the  features to verify the simplification of a radical expression.** |  |
| **3/22** | 19.3 Simplifying Radical Expressions (Objective B) |  |
| **3/27** | 19.4 Addition, Subtraction, and More Multiplication | **Assign Practice Lab 6**  **(19.1, 19.2, 19.3, 19.4)** |
| **3/29** | 19.5 More on Division of Radical Expressions |  |
| 4/3 | 19.6 Solving Radical Equations |  |
| **4/5** | 19.8 The Complex Numbers  Review | **Assign Practice Lab 7**  **(19.5, 19.6, 19.8)** |
| **4/10** | **Test 3 (Chapter 19)** | **Lab Quiz 6, Lab Quiz 7 due** |
| **4/12** | 20.1 The Basics of Solving Quadratic Equations |  |
| **4/17** | 20.2 The Quadratic Formula |  |
| **4/19** | 20.3 Applications Involving Quadratic Equations | **Assign Practice Lab 8**  **(20.1, 20.2, 20.3)** |
| **4/24** | 20.5 Graphing f(x) = a(x – h)2 + k  20.6 Graphing f(x) = ax2 + bx + c |  |
| **4/26** | **Test 4 (Chapter 20)** | **Lab Quiz 8 due** |
| **5/1** | 20.7 Mathematical Modeling with Quadratic Equations | **Assign Practice Lab 9**  **(20.5, 20.6, 20.7)** |
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| **5/3** | Review for final exam | **Assign Practice Lab**  **10**  **(Overview)** |
| **5/5** |  | **Lab Quiz 9, Lab Quiz 10 due** |
| **5/10** | **FINAL EXAM Bring graphing calculator, scantron, blue book, pencil, eraser.** |  |
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**MATH 0310 INTERMEDIATE ALGEBRA**

**COURSE OBJECTIVES**

Algebra Foundations: Basic Math, Introductory Algebra, and Intermediate Algebra, First Edition

Marvin L. Bittinger, Judith A. Beecher, Barbara L. Johnson

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| **Upon successful completion of this course, students will be able to:** | **Textbook Reference** |
| 1. **Define, represent, and perform operations on real and complex numbers.** |  |
| Add, subtract, multiply, and divide complex numbers. | 19.8 |
| 1. **Recognize, understand, and analyze features of a function.** |  |
| Identify a relation as a function given (i) a set of points, (ii) an equation, (iii) a graph using the vertical line test, or (iv) a table of values. | 16.1  (Supplement for Relation and (iv) Table of Values |
| Graph a quadratic function by plotting the intercepts, the vertex, and utilizing the axis of symmetry. | 20.5, 20.6 |
| Find (i) the vertex using , (ii) the direction of the parabola, and (iii) the axis of symmetry, given a quadratic function in the form . | 20.6 |
| Determine any maximum or minimum, given a graph of a quadratic function. | 20.5, 20.6 |
| Graph an absolute value equation. | 16.1 |
| Evaluate a function for a specified value given an equation and a graph. | 16.1 |
| Determine the domain of a function given an equation. | 16.2 |
| Determine the domain and range of a graph. | 16.2 |
| Determine the domain of a radical function from an equation and a graph. | 19.1  (Supplement to build upon index >2) |
| Find the sum, difference, product, and quotient of two functions, and the domain of the quotient of two functions. | Appendix D |
| 1. **Recognize and use algebraic (field) properties, concepts, procedures (including factoring), and algorithms to combine, transform, and evaluate absolute value, polynomial, radical, and rational expressions.** |  |
| Use a general strategy to factor a polynomial completely. | 14.7 |
| Reduce a rational expression to lowest terms. | 15.1 |
| Multiply and divide two rational expressions. | 15.1, 15.2 |
| Add and subtract two rational expressions. | 15.3, 15.4, 15.5 |
| Simplify a complex fraction. | 15.6 |
| Simplify a radical expression. | 19.3 |
| Evaluate a radical function. | 19.1 |
| Evaluate an absolute value expression | Supplement to Evaluate an Absolute Value Expression |
| Simplify an expression containing rational exponents. | 19.2 |
| Add, subtract, and multiply radical expressions. | 19.3, 19.4 |
| Divide an expression with a monomial or binomial denominator containing a radical. | 19.3, 19.5 |
| 1. **Identify and solve absolute value, polynomial, radical, and rational equations.** |  |
| Solve an equation containing rational expressions. | 15.7 |
| Solve an absolute value equation. | 18.3 |
| Solve a quadratic equation with integer coefficients by (i) factoring, (ii) using the square root principle, (iii) completing the square, and (iv) the quadratic formula. | 14.8, 20.1, 20.2 |
| Solve a radical equation. | 19.6 Objective A |
| 1. **Identify and solve absolute value inequalities.** |  |
| Solve an absolute value inequality | 18.3 |
| 1. **Model, interpret and justify mathematical ideas and concepts using multiple representations.** |  |
| 1. **Connect and use multiple strands of mathematics is situations and problems, as well as in the study of other disciplines.** |  |
| Solve an application requiring a quadratic equation. | 20.3, 20.7 |
| Solve an application requiring a rational equation. | 15.8 Objective A |
| Solve an application requiring a radical equation. | 19.6 |

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| **The student will demonstrate competency in the use of a graphing calculator by:** |  |
| Using the ROOT (ZERO) and INTERSECT features to solve an equation. | 14.8 (see page 930), 19.6 (see page 1280), 20.2 (see page 1331) |
| Checking solutions to a linear or quadratic equation using the VARS, VALUE, STO or TABLE feature. | 16.1 |
| Identifying the maximum or minimum value of a quadratic function using the MINIMUM or MAXIMUM feature. | 20.7 (see page 1380) |
| Graphing a linear function. | 12.2 (see page 745), 12.3 (see page 752) |
| Using the  features to verify the simplification of a radical expression, when appropriate. | Calculator Supplement |