

## COLLIN COLLEGE COURSE SYLLABUS

COURSE INFORMATION
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**Course Number:** MATH 0310

**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.

**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:** “See the current *Collin Registration Guide* for the last day to withdraw.”

**Collin College Academic Policies:** “See the current *Collin Student Handbook*.”

**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, SCC-D140 or 972.881.5898 (V/TTD: 972.881.5950) to arrange for appropriate accommodations. See the current *Collin Student Handbook* for additional information.

INSTRUCTOR INFORMATION
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**Instructor's Name:** Julie Turnbow

**Office Number:** J241 (Inside Suite J236)

**Office Hours:** Monday, Wednesday, and Fridays from 9 to 9:45 am (D203); Monday and Wednesdays from 1 to 2 pm (in I216); Tuesdays from 11:30 to 12:30 pm (D203); Thursdays from 4 to 5 pm (D203)

**Phone Number:** 972-377-1719

In case of emergency, contact the Developmental Education office (SCC K102) at (972) 881-5720.

**Email:** [jturnbow@collin.edu](mailto:jturnbow@collin.edu) I will check email every day and return emails within 72 hours.

**Class Information:**

**Section Number:** S17

**Meeting Times:** 1:00 to 2:15 pm

**Meeting Location:** SCCK212

**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% of the meetings of a Developmental Education class between the beginning of class and the college withdrawal date, 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:** Developmental courses may be taken for a combined total of no more than 27 credit hours. In addition, a student may repeat this course only once after receiving a grade, including W. If you drop this class before census day, 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. Students found responsible for scholastic dishonesty in this class may have a grade of 0 assigned or a course grade of "FD".

**Course Resources:** The College provides group tutoring and a Math Lab at no charge at each campus to support student success in this class. Students are required to purchase a software license for use in this class. Please see: <http://www.collin.edu/collegesurvival/> for a listing of available college support resources

**Textbook:** The MyMathLab (MML) Integrated Course Sequence code (**ISBN # 0321757378**) is **required**. The code can be purchased online or through the bookstore. The MyMathLab (MML) Integrated Course Sequence code includes access to the eText version of Bittinger and Beecher's *Algebra Foundations: Basic Math, Introductory and Intermediate Algebra*. The code is good for the entire developmental math sequence.

There are **optional** items in the bookstore if students choose to purchase them:

- Bittinger and Beecher *Algebra Foundations: Basic Math, Introductory and Intermediate Algebra* (book with MML code) ISBN # 0133862321\*
- Custom Textbook, Bittinger *Algebra Foundations, Custom for Collin College* ISBN #

13231513381

\*If you choose to purchase the custom textbook after purchasing the MyMathLab (MML) Integrated Course Sequence code you will be paying more than the cost of the book with MML code (ISBN # 0133862321).

**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 a pen, pencil, notebook, graphing calculator, the syllabus, and any reviews and other papers that I ask you to print.

**Attendance Policy:** 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. 147, 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. All electronic devices (including cell phones, laptop computers, iPods, MP3, etc.) must be turned **OFF** and stored out of sight during class. Students who are using any electronic devices for text message, IM, email, and **etc.** during the class time will be asked to leave the class without returning for the remaining time; considered absent for that class meeting. Students will also be reported to the Dean of Students Office (DOS) at the second offence. If an emergency arises which necessitates the use of a cell phone, the please exit the classroom in an orderly fashion. Please do not disturb the lecture—otherwise every student needs prior approval.

**Course Requirements:** Attend class as scheduled and complete the required work: homework, Labs, Tests in Class, and a Final Examination, and any other assignments required by the Professor. Students will be expected to bring textbook, calculator, pencil and paper to class each day and take notes accordingly. With the exception of a graphing calculator, all electronic devices are expected to be switched **off** during class, unless an exception is obtained from the Professor in advance. Students are not permitted to leave early without prior permission. Arrange for appropriate child care when needed—children are not allowed.

**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 total number of points in the class is 700.**

The **Grading Scale** will be: AD: 626 to 700 BD: 556 – 625; CD: 486 – 555; FD: below 486

**Tests** –There will be 4 exams given (not including the final exam). Each exam will be worth 100 points. If the Final Exam is higher than the lowest exam grade, the Final Exam will replace the lowest exam grade. There will be no make-up exams. If you miss an exam, the exam grade will be a zero. Exam 1 will be given in the Testing Center. You must have a current student id to take the test in the Testing Center. Exams 2, 3, 4, and the Final will be given in class. The total number of points for the exams is 400. See schedule below.

**Lab exercises** –Students will complete 10 Labs on the MyMathLab website. Each lab will have a practice lab, which contains 15 questions. Labs 2 through 10 will contain problems from both the current section and previous sections. Students have unlimited changes to take the practice lab; however, there is only one chance for the actual lab. The URL, instructions for enrolling, and the required course ID will be

provided in a separate document. The labs will be worth a total of 100 points.

**Course ID:** turnbow94515

**Homework** –The homework will be worth a total of 100 points.

**Final exam**–The Final Exam is worth 100 points. 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.**

**The Census date is February 1, 2016. The last day to withdrawal is March 18, 2016. No food or drink in the classroom.**

**Tentative Course Calendar:**

<b>Math 0310</b> <u>Algebra Foundations, 1<sup>st</sup> ed. by Bittinger/Beecher</u>		
<b>Day</b>	<b>Sections to Cover</b>	<b>0310 Labs</b>
<b>1/19</b>	Syllabus, Introductions 12.2 Graphing Linear Equations	
<b>1/21</b>	12.3 More with Graphing and Intercepts 16.1 Functions and Graphs <b>Supplement: Relations and Table of Values</b>	<b>Lab 1</b> (Review)
<b>1/26</b>	16.2 Finding Domain and Range Appendix D The Algebra of Functions	
<b>1/28</b>	<b>Supplement: Evaluate an Absolute-Value Expression</b> 18.3 Absolute-Value Equations and Inequalities	<b>Lab 2</b>
<b>2/2</b>	<b>Review / Test 1</b>	
<b>2/4</b>	14.7 Factoring: A General Strategy 14.8 Solving Quadratic Equations by Factoring	
<b>2/9</b>	15.1 Multiplying and Simplifying Rational Expressions	<b>Lab 3</b>
<b>2/11</b>	15.2 Division and Reciprocals 15.3 Least Common Multiples and Denominators	
<b>2/16</b>	15.4 Adding Rational Expressions	
<b>2/18</b>	15.5 Subtracting Rational Expressions	<b>Lab 4</b>
<b>2/23</b>	15.6 Complex Rational Expressions	
<b>2/25</b>	15.7 Solving Rational Equations 15.8 Applications Using Rational Equations and Proportions (Objective A only)	
<b>3/1</b>	15.8 Applications Using Rational Equations and Proportions (Objective A only) Review Test 2	
<b>3/3</b>	<b>Test 2 (In Class)</b>	<b>Lab 5</b>
<b>3/15</b>	19.1 Radical Expressions and Functions <b>Supplement: Determine the Domain of Radical Functions when the index is greater than 2</b> 19.2 Rational Numbers as Exponents	
<b>3/17</b>	19.3 Simplifying Radical Expressions (Objective A) <b>Supplement: Using the <math>\sqrt{\quad}</math>, <math>\sqrt[3]{\quad}</math>, <math>\sqrt[x]{\quad}</math> features to verify the simplification of a radical expression.</b>	

<b>3/22</b>	19.3 Simplifying Radical Expressions (Objective B) 19.4 Addition, Subtraction, and More Multiplication	
<b>3/24</b>	19.5 More on Division of Radical Expressions	<b>Lab 6</b>
<b>3/29</b>	19.6 Solving Radical Equations	
<b>4/5</b>	19.8 The Complex Numbers Review Test 3	
<b>4/7</b>	<b>Test 3 In (Class)</b>	<b>Lab 7</b>
<b>4/12</b>	20.1 The Basics of Solving Quadratic Equations	
<b>4/14</b>	20.2 The Quadratic Formula	
<b>4/19</b>	20.3 Applications Involving Quadratic Equations	<b>Lab 8</b>
<b>4/21</b>	20.5 Graphing $f(x) = a(x - h)^2 + k$	
<b>4/26</b>	20.6 Graphing $f(x) = ax^2 + bx + c$	
<b>4/28</b>	20.7 Mathematical Modeling with Quadratic Equations Test 4 Review	
<b>5/3</b>	<b>Test 4 (In Class)</b>	<b>Lab 9</b>
<b>5/5</b>	Review for final exam	
<b>5/10</b>	<b>Final Exam 1 to 3 pm (in class)</b> <b>Bring Bluebook, Scantron, Pencil, and Calculator</b>	<b>Lab 10</b> <b>(Overview)</b>

**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

Upon successful completion of this course, students will be able to:	Textbook Reference
<b>1. Define, represent, and perform operations on real and complex numbers.</b>	
Add, subtract, multiply, and divide complex numbers.	19.8
<b>2. Recognize, understand, and analyze features of a function.</b>	
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 $\left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right)\right)$ , (ii) the direction of the parabola, and (iii) the axis of symmetry, given a quadratic function in the form $f(x) = ax^2 + bx + c$ .	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
<b>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.</b>	
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
<b>4. Identify and solve absolute value, polynomial, radical, and rational equations.</b>	
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
<b>5. Identify and solve absolute value inequalities.</b>	
Solve an absolute value inequality	18.3
<b>6. Model, interpret and justify mathematical ideas and concepts using multiple representations.</b>	
<b>7. Connect and use multiple strands of mathematics in situations and problems, as well as in the study of other disciplines.</b>	
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

<b>The student will demonstrate competency in the use of a graphing calculator by:</b>	
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 $\sqrt{\quad}$ , $\sqrt[3]{\quad}$ , $\sqrt[x]{\quad}$ features to verify the simplification of a radical expression, when appropriate.	Calculator Supplement