



## Mathematics Your HCCS Campus

Math 0308: Fundamental Mathematics II

CRN – 44981 Summer II / 2013

NOLN | 1.00pm – 4.10pm | MTWR

3 hour lecture course +1hour lab / 48 hours per semester/ 4 weeks

Textbook: Pre-algebra and Introductory Algebra (3<sup>rd</sup> Ed) by Bittinger, Ellenbogen, Beecher and Johnson

ISBN-13: 9780321731715

MyMathLab Course ID: N/A

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### Course Description

Fundamentals of Mathematics II: Topics include real numbers, basic geometry, polynomials, factoring, linear equations, inequalities, quadratic equations and rational expressions.

**Student in this course take a** departmental final examination at the end of the course. To pass the course, students have to score 60% or more. Prerequisite: MATH 0306 or equivalent test score.

### Prerequisites

SAT: 450-499; ASSET: Numerical Skills Raw Score: 19+; Scaled Score 42+; ASSET Elementary Algebra Raw Score 0-13; Scaled Score: 23-44; Math 0306: Pass with “C” or better

### Course Goal:

This course is intended for students who have either never been exposed to algebra or who have been away from the subject for quite some time. Particularly, this course is intended to prepare students for the study of Intermediate Algebra.

### Course Student Learning Outcomes (SLO):

1. Identify and apply properties of real numbers, and perform accurate arithmetic operations with numbers in various formats and number systems.
2. Demonstrate the ability to manipulate/simplify algebraic expressions, & classify/solve algebraic equations with appropriate techniques.
3. Demonstrate the use of elementary graphing techniques.
4. Apply basic geometric theorems and formulas to rectangles, squares, parallelograms, triangles, trapezoids, circles, and angles.

### Learning objectives

Students will:

- 1.1 add, subtract, multiply and divide real numbers and manipulate certain expressions.
- 1.2 solve problems using scientific notation.
- 1.3 find square roots of perfect square numbers
- 2.1 solve problems using equations and inequalities.
- 2.2 factor polynomials using the techniques of the greatest common factor, grouping, difference of two squares and special trinomials.
- 2.3 multiply and divide, and simplify rational expressions
- 3.1 plot ordered pairs and graph linear equations.
- 4.1 find the perimeter and area of rectangles, squares, parallelograms, triangles, trapezoids and circles; volume and surface area, relations between angle measures, congruent and similar triangles, and properties of parallelograms.

### CALENDAR

Last date for Admin / Student withdrawal is:

President Day Holiday:

Spring Break:

Spring Holiday:

Instruction Ends

Finals Exams Week

Grades Available

**Instructional Methods**

Each class will begin with questions concerning the previous material discussed and assigned homework problems. Lectures and new material will be followed by students work on examples in class. Students are expected to work the review exercises at the end of each chapter and to go to tutorial at the Learning Center to use the Learning Resource Center at their respective college.

**Course Schedule:**

Chapters and Sections

**SECTION NUMBERS & TOPICS**

**8 GEOMETRY (3 hours)**

This unit presents the basic geometric figures and their relations. The instructor should emphasize the perimeter and area of rectangles, squares, parallelograms, triangles, trapezoids, and circles; volume and surface area; and relations among angle measures. This unit concludes with congruent and similar triangles; the properties of parallelograms.

<b>8.1</b>	<b>Basic Geometric Figures</b> .....	518
<b>8.2</b>	<b>Perimeter</b> .....	529
<b>8.3</b>	<b>Area</b> .....	534
<b>8.4</b>	<b>Circles</b> .....	545
<b>8.5</b>	<b>Volume and Surface Area</b> .....	556
<b>8.6</b>	<b>Relationships Between Angle Measures</b> .....	567
<b>8.7</b>	<b>Congruent Triangles and Properties of Parallelograms</b> .....	577
<b>8.8</b>	<b>Similar Triangles</b> .....	589

**9 INTRO. TO REAL NUMBERS & ALGEBRAIC EXPRESSIONS (4 hours)**

This unit presents an introduction to algebra and the real number system. The instructor should emphasize addition, subtraction, multiplication and division of real numbers and the properties of real numbers. This unit concludes with simplifying expressions and the order of operations.

<b>9.1</b>	<b>Introduction to Algebra</b> .....	614
<b>9.2</b>	<b>The Real Numbers</b> .....	621
<b>9.3</b>	<b>Addition of Real Numbers</b> .....	633
<b>9.4</b>	<b>Subtraction of Real Numbers</b> .....	641
<b>9.5</b>	<b>Multiplication of Real Numbers</b> .....	650
<b>9.6</b>	<b>Division of Real Numbers</b> .....	657

<b>9.7</b>	<b>Properties of Real Numbers</b> .....	666
<b>9.8</b>	<b>Simplifying Expressions; Order of Operations</b> .....	679

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**RECOMMEND EXAMINATION I: COVERS CHAPTERS 8 & 9** **(1 to 1.5 hours)**

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## **10 SOLVING EQUATIONS AND INEQUALITIES** **(4 hours)**

The major emphasis of this chapter is to teach solving linear equations. A mastery of this chapter requires that the student have a thorough understanding of combining like terms and properties of equality. The skills necessary for solving equations is extended to include working with the equality of two fractions and solving inequalities in a single variable.

<b>10.1</b>	<b>Solving Equations: The Addition Principle</b> .....	698
<b>10.2</b>	<b>Solving Equations: The Multiplication Principle</b> .....	704
<b>10.3</b>	<b>Using the Principles Together</b> .....	710
<b>10.4</b>	<b>Formulas</b> .....	721
<b>10.5</b>	<b>Applications of Percent</b> .....	731
<b>10.6</b>	<b>Applications and Problem Solving</b> .....	739
<b>10.7</b>	<b>Solving Inequalities</b> .....	756
<b>10.8</b>	<b>Applications and Problem Solving with Inequalities</b> .....	768

## **11 GRAPHS OF LINEAR EQUATIONS** **(3 hours)**

This unit introduces plotting ordered pairs and concludes with sketching a linear equation

<b>11.1</b>	<b>Graphs and Application of Linear Equations</b> .....	784
<b>11.2</b>	<b>More with Graphing and Intercepts</b> .....	801

## **12 POLYNOMIALS: OPERATIONS** **(4 hours)**

This unit begins with integer exponents and scientific notation. The topics include the techniques to recognize a polynomial and find the degree of a polynomial; perform addition, subtraction, multiplication and division of polynomials.

<b>12.1</b>	<b>Integers as Exponents</b> .....	862
<b>12.2</b>	<b>Exponents and Scientific Notation</b> .....	872
<b>12.3</b>	<b>Introduction to Polynomials</b> .....	884

<b>12.4</b>	<b>Addition and Subtraction of Polynomials</b> .....	897
<b>12.5</b>	<b>Multiplication of Polynomials</b> .....	907
<b>12.6</b>	<b>Special Products</b> .....	914
<b>12.7</b>	<b>Operations with Polynomials in Several Variables</b> .....	925
<b>12.8</b>	<b>Division of Polynomials (Monomials Divisors Only)</b> .....	934

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**RECOMMEND EXAMINATION 2: COVERS CHAPTERS 10 & 12 (1.5 HOURS)**

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## **13 POLYNOMIALS: FACTORING (4 hours)**

This unit covers factorization of polynomials.

<b>13.1</b>	<b>Introduction to Factoring</b> .....	950
<b>13.2</b>	<b>Factoring Trinomials of the Type <math>x^2 + bx + c</math></b> .....	959
<b>13.3</b>	<b>Factoring <math>ax^2 + bx + c</math>, <math>a \neq 1</math>: The FOIL Method</b> .....	969
<b>13.4</b>	<b>Factoring <math>ax^2 + bx + c</math>, <math>a \neq 1</math>: The ac – Method</b> .....	977
<b>13.5</b>	<b>Factoring Trinomial Squares and Differences of Squares</b> .....	985
<b>13.6</b>	<b>Factoring : A General Strategy</b> .....	995
<b>13.7</b>	<b>Solving Quadratic Equations by Factoring</b> .....	1003
<b>13.8</b>	<b>Applications of Quadratic Equations</b> .....	1012

## **14 RATIONAL EXPRESSIONS AND EQUATIONS (4 hours)**

This unit begins with multiplying and simplifying rational expressions. The topics include the techniques to reduce or build-up fractions; perform addition, subtraction, multiplication and division of fractions.

<b>14.1</b>	<b>Multiplication and Simplifying Rational Expressions</b> .....	1034
<b>14.2</b>	<b>Division and Reciprocals</b> .....	1044

## **16 RADICAL EXPRESSIONS AND EQUATIONS (4 hours)**

This unit covers finding the principal square roots, identifying radicands of radical expressions, identifying whether a radical expression represents a real number and simplifying radical expressions with a perfect-square radicand.

<b>16.1</b>	<b>Introduction to Radical Expressions</b> .....	1174
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**RECOMMEND EXAMINATION 3: CHAPTERS 13, 14.1, 14.2 AND 17.1 (1.5 HOURS)**

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## Test Schedule:

Test	Chapters Covered on Test	Date
Class Test #1	Chapters 1, 2, 3, 4, 5, 8, 9	07/11/2013
Class Test #2	Chapters 9 and 10	07/18/2013
Class Test #3	Chapters 11 and 12	07/25/2013
Class Test #4	Chapters 13 and 14	08/01/2013
Final Exam	Comprehensive	08/07/2013

### Final Exam Policy in Developmental Mathematics:

The following policy was adopted by Houston Community College regarding the system-wide

Final Examinations in developmental mathematics courses:

If a student scores less than or equal to 50% on the Final Exam, then the student receives an **F** in the course. If a student scores at least 51% but less than 60 on the Final Exam, then the student earns a **D** or an **F** in the course (depending on the course average). If a student scores at least a 60 on the Final Exam, then the grades will be averaged in accordance with the grade calculation formula as stated on the student syllabus; i.e., the student earns an **A, B, C, D,** or **F** in the course.

### System-Wide Policies:

1. Each instructor must cover all course topics by the end of the semester. The final exam is comprehensive and questions on it can deal with any of the course objectives.
2. Each student should receive a copy of the instructor's syllabus during the first week of class.
3. A minimum of three in class tests and a comprehensive final departmental examination must be given. The final examination must be taken by all students.
4. All major tests should be announced at least one week or the equivalent in advance.
5. The final exam must count for at least 25 to 40 percent of the final grade.
6. A System-Wide Final Examination must be passed with a score of at least 60%. If a student scores 50-59% on the Final Examination, the student can only receive either a **D** or an **F** as their final class grade
7. The final course average will be computed using a ten point scale.  
(90–100 "**A**", 80–89 "**B**", 70–79 "**C**", 60-69 "**D**" 59 or below "**F**"). Note: The grades of **W** or **IP** are no longer available instructors to assign.
8. Neither an open book nor a take home major test may be given at the discretion of the instructor.
9. Any review sheet should be comprehensive and the student should not feel that classroom notes, homework, and tests may be ignored in favor of the review sheet for any examination.
10. *No calculators are to be used on graded course work and in particular all examinations*

## Assessments

The grade in this class will consist of averages from 1) the four class tests, 2) the home works assignments, 3) the lab assignments and 4) the final exam

### Instructor Requirement.

Grading Scale:

Your final course grade is based on the following standard HCC scale.

Final Average	Final Course Grade
$90 \leq \text{Average} \leq 100$	A
$80 \leq \text{Average} < 90$	B
$70 \leq \text{Average} < 80$	C
$60 \leq \text{Average} < 70$	D
Average < 60	F

A grade of “IP” (In Progress) cannot be given in this course. **A score of 50% or less in the final examination will result in an automatic “F” in the course.** However, if your final grade is a “D”, then you may be eligible to take the bridge course MATH 0106 instead of repeating the class. To determine eligibility, please contact the Math department.

**Final Examination:** The final examination is departmental and consists of 33 – 40 multiple choice problems. The problems cover only the materials specified in the course curriculum.

**Resource Materials:** Any student enrolled in Math 0308 at HCC has access to the Learning Resource Center (LRC) where they may get additional help in understanding the theory or improving their skills. The LRC is staffed with mathematics faculty, student assistants, offers tutorial help, videotapes and computer assisted drills. Also available is a student solutions manual that may be obtained from the bookstore.

### Student Assignments

Home Work assignments will be given weekly, with a focus on the topics covered during the week. Homework assignments are due on the date specified in class (generally, the next class section except otherwise stated) regardless of absence. **Late HW assignments will be assessed a penalty of 50% of the total available points. Homework assignments must be presented on a three problem solutions per page.** There will be four exams in the course; none will be a take home. There will be no make-up exams in the course except in the event of a pre-arranged absence or an emergency.

### HCC Policy Statement - ADA

#### Services to Students with Disabilities

Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at his or her respective college at the beginning of each semester. Faculty members are authorized to provide only the accommodations requested by the Disability Support Services Office. Persons needing accommodations due to a documented disability should contact the ADA counselor for their college as soon as possible. For questions, please contact Donna Price at 713.718.5165. To visit the ADA Web site, please visit [www.hccs.edu](http://www.hccs.edu) then click Future students, scroll down the page and click on the words Disability Information.

## HCC Policy Statement: Academic Honesty

Note: As with all developmental mathematics courses at HCC, **the use of a calculator during an exam is prohibited** and will be considered cheating.

All students are required to exercise academic honesty in completing their assignments and tests. Cheating involves deception for the purpose of violating testing rules. Students who improperly assist other students are just as guilty as those who receive improper assistance. A student guilty of a first offense will receive a grade of "F" on the quiz or test involved. For a second offense, the student will receive a grade of "F" for the course.

A student who is academically dishonest is, by definition, not showing that the coursework has been learned, and that student is claiming an advantage not available to other students. The instructor is responsible for measuring each student's individual achievements and also for ensuring that all students compete on a level playing field. Thus, in our system, the instructor has teaching, grading, and enforcement roles. You are expected to be familiar with the University's Policy on Academic Honesty, found in the catalog. What that means is: If you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by College System officials against a student accused of scholastic dishonesty. "Scholastic dishonesty": includes, but is not limited to, cheating on a test, plagiarism, and collusion.

Cheating on a test includes:

- Copying from another students' test paper;
- Using materials not authorized by the person giving the test;
- Collaborating with another student during a test without authorization;
- Knowingly using, buying, selling, stealing, or transporting, in whole or part the contents of a test not yet administered;
- Bribing another person to obtain a test that is to be administered.

Plagiarism means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.

Collusion mean the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishments for academic dishonesty may include a grade of 0 or F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook)

## HCC Policy Statements

*Class Attendance - It is important that you come to class!* Attending class regularly is the best way to succeed in this class. Research has shown that the single most important factor in student success is attendance. Simply put, going to class greatly increases your ability to succeed. You are expected to be on time at the beginning of each class period. For complete information regarding Houston Community College's policies on attendance, please refer to the Student Handbook. You are responsible for materials covered during your absences. Class attendance is checked daily. Although it is your responsibility to drop a course for nonattendance, the instructor has the authority to drop you for excessive absences.

If you are not attending class, you are not learning the course information. As the information that is discussed in class is important for your career, **students may be dropped from a course after accumulating absences in excess of six (6) hours of instruction.** The six hours of class time would include any total classes missed or for excessive tardiness or leaving class early. Six hours of class instruction in the fall and spring semesters is equivalent to four class days while in summer semester, it is two class days.

You may decide NOT to come to class for whatever reason. As an adult making the decision not to attend, you do not have to notify the instructor prior to missing a class. However, if this happens too many times, you may suddenly find that you have been dropped from the class.

Poor attendance records tend to correlate with poor grades. If you miss any class, including the first week, **you are responsible for all material missed.** It is a good idea to find a friend or a buddy in class who would be willing to share class notes or discussion or be able to hand in your work if you unavoidably have to miss a class.

### **HCC Course Withdrawal Policy:**

If you feel that you cannot complete this course, you will need to withdraw from the course prior to the final date of withdrawal. Before, you withdraw from your course; please take the time to meet with the instructor to discuss why you feel it is necessary to do so. The instructor may be able to provide you with suggestions that would enable you to complete the course. Your success is very important. Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than **SIX** total course withdrawals **throughout** their educational career in obtaining a certificate and/or degree.

To help students avoid having to drop/withdraw from any class, HCC has instituted an Early Alert process by which your professor *may* “alert” you and HCC counselors that you might fail a class because of excessive absences and/or poor academic performance. It is your responsibility to visit with your professor or a counselor to learn about what, if any, HCC interventions might be available to assist you – online tutoring, child care, financial aid, job placement, etc. – to stay in class and improve your academic performance.

If you plan on withdrawing from your class, you **MUST** contact a HCC counselor or your professor prior to withdrawing (dropping) the class for approval and this must be done **PRIOR** to the withdrawal deadline to receive a “W” on your transcript. **\*\*Final withdrawal deadlines vary each semester and/or depending on class length, please visit the online registration calendars, HCC schedule of classes and catalog, any HCC Registration Office, or any HCC counselor to determine class withdrawal deadlines. *Remember to allow a 24-hour response time when communicating via email and/or telephone with a professor and/or counselor. Do not submit a request to discuss withdrawal options less than a day before the deadline.* If you do not withdraw before the deadline, you will receive the grade that you are making in the class as your final grade. **The last day to withdraw is at 4.30pm.****

### **Repeat Course Fee**

The State of Texas encourages students to complete college without having to repeat failed classes. To increase student success, students who repeat the same course more than twice, are required to pay extra tuition. The purpose of this extra tuition fee is to encourage students to pass their courses and to graduate. Effective fall 2006, HCC will charge a higher tuition rate to students registering the third or subsequent time for a course. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, reading and writing homework, test taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available.

### **Classroom Behavior**

Students are expected to comport themselves and not engage in any form of disruptive activities while the class is in session. Any conduct that is deemed detrimental to the academic atmosphere, such as the use of cell phone or consistent talking during instructional delivery; will not be tolerated. Any student found guilty of such conduct by the instructor will be told to leave the classroom until further notice. Please, be sure to turn off your cell phone before entering the class room. Going in and out of the classroom to take phone calls is very distracting and very detrimental to the academic environment; it is therefore discouraged.

### **Use of Camera and/or Recording Devices**

As a student active in the learning community of this course, it is your responsibility to be respectful of the learning atmosphere in your classroom. To show respect of your fellow students and instructor, you will turn off your phone and other electronic devices, and will not use these devices in the classroom unless you receive permission from the instructor.

Use of recording devices, including camera phones and tape recorders, is prohibited in classrooms, laboratories, faculty offices, and other locations where instruction, tutoring, or testing occurs. Students with disabilities who need to use a recording device as a reasonable accommodation should contact the Office for Students with Disabilities for information regarding reasonable accommodations

### **Personal Communication Device Policy:**

All personal communication devices (any device with communication capabilities including but not limited to cell phones, blackberries,



paggers, cameras, palmtop computers, lap tops, PDA's, radios, headsets, portable fax machines, recorders, organizers, databanks, and electronic dictionaries or translators) must be muted or turned off during class. Such activity during class time is deemed to be disruptive to the academic process. Personal communication devices are not be on the student desk during examinations. Usage of such devices is expressly prohibited during examinations and will be considered cheating (see academic honesty section above).

**Mathematics Bridge Course Statement for 0308:**

Any student who earns a grade of D in Math 0308 is required to enroll in the Bridge Course-Math 0108. Please visit with the instructor of your course for details.

**Student Course Reinstatement Policy:**

Students have a responsibility to arrange payment for their classes when they register, either through cash, credit card, financial aid, or the installment plan. Faculty members have a responsibility to check their class rolls regularly, especially during the early weeks of a term, and reconcile the official class roll to ensure that no one is attending class whose name does not appear on it. Students who are dropped from their courses for nonpayment of tuition and fees who request reinstatement after the official date of record (OE Date) can be reinstated by making payment in full and paying an additional \$75 per course reinstatement fee. A student requesting reinstatement should present the registrar with a completed Enrollment Authorization Form with the signature of the instructor, department chair, or dean who should verify that the student has been attending class regularly. Students who are reinstated are responsible for all course policies and procedures, including attendance requirements.

**Resources:**

Free tutoring is available in the Learning Center at the fourth floor of North-line Campus. Additional help is also available through Student Support Services. Students can get free assistance, 24 hours a day, 7 days a week, in Math, English and other subjects, at [www.hccs.askonline.net](http://www.hccs.askonline.net). Typically, posted questions are answered by an HCC tutor or faculty within 24 hours (usually under 6 hours). There are also several online math resources that you can find with an internet search. You may also find information on the Learning Web site accessible through your specific HCCS campus website.