# Houston Community College-NW
# Course Syllabus
# Intermediate Algebra-Math 0312
# Spring Semester 2013

**Instructor: Tim Leite**
**Office Phone Number: 713-718-5511**
**Office Hours: By Appointment.**
**Email:** timothy.leite@hccs.edu
**Course Time and Location: MW 7:00 – 8:30 pm. RM 213, Spring Branch**
**CRN: 32453**

**Catalog Description**: Topics include factoring techniques, radicals, algebraic fractions, complex numbers, graphing linear equations and inequalities, quadratic equations, systems of equations, graphing quadratic equations and an introduction to functions. Emphasis is placed on algebraic techniques, in order to successfully complete Math 1314 College Algebra. A departmental final examination must be passed with a score of 60% or more in order to pass this course.

**Prerequisites**:  ASSET:  Elementary Algebra Raw Score: 14–25
Scaled Score: 45 – 55
ASSET:  Intermediate Algebra Raw Score: 0–15,
Scaled Score: 23–45
Math 0308: Pass with "C" or better

**Credit:** 3 hours credit (3 Lecture), and 1 hr Lab using MyMathLab

**Course Intent**: This is the final course in the developmental mathematics sequence and its purpose is to prepare students for College Algebra.

**Audience**: This course is for students who require state mandated remediation.

**Course Objectives**: Upon completion of this course, a student should be able to perform the following mathematical skills.

1.  add, subtract, multiply and divide polynomials
2.  factor polynomials
3.  add, subtract, multiply and divide rational expressions
4.  simplify complex fractions
5.  solving equations involving rational expressions
6.  graph linear equations & linear inequalities in two variables
7.  find the slope of a line & write its equation
8.  simplify equations involving rational exponents and simplify radicals

9.  add, subtract, multiply, divide expressions involving radicals and solve radical equations
10. add, subtract, multiply and divide complex numbers
11. solve quadratic equations by factoring, completing the square, use of the quadratic formula and the square root property
12. graph quadratic functions and inequalities
13. solve systems of linear equations in two variables
14. solve word problems
15. recognize functional notation & evaluate functions

**Textbook**:    Lial , Margaret L.; Hornsby, John; McGinnis, Terry, <u>INTERMEDIATE ALGEBRA (11<sup>th</sup> Ed)</u>.  Addison Wesley: Boston, 2012.

**Course Outline**:

| CHAPTER | (*Approximate time)* |
|---|---|

# 2    LINEAR EQUATIONS, INEQUALITIES, AND APPLICATIONS    *(4 hours)*

*Topics to be covered include*: linear equations in one variable and formulas with applications.  The unit concludes with absolute value equations and inequalities.

# 3    GRAPHS, LINEAR EQUATIONS, AND FUNCTIONS    *(6 hours)*

*Topics to be covered include*:  graphing lines in the coordinate plane, the slope of a line, equations of a line, linear inequalities and their graphs, relations and functions.  The section concludes with variation.

# 4     SYSTEMS OF LINEAR EQUATIONS     *(1.5 hours)*

*Topics to be covered include*:  solving systems by graphing, elimination, and substitution methods.  This unit only considers two by two systems of linear equation.

# 5     EXPONENTS, POLYNOMIALS, & POLYNOMIAL FUNCTIONS     *(6 hours)*

*Topics to be covered include*:  integer exponents, scientific notation, polynomial functions. This unit concludes with multiplying, and dividing polynomials.

# 6     FACTORING     *(6 hours)*

*Topics to be covered include*:  factoring out the GCF, factoring the difference of two squares, factoring the general trinomial, factoring the sum and difference of two cubes, and factoring by grouping.

# 7     RATIONAL EXPRESSIONS AND FUNCTIONS     *(6 hours)*

*Topics to be covered include*: rational expressions and functions; multiplying, dividing, adding and subtracting rational expressions; complex fractions. The unit concludes with equations involving rational expressions and applications of rational expressions.

# 8     ROOTS, RADICALS, AND ROOT FUNCTIONS     *(6 hours)*

*Topics to be covered include*: Radical expressions and exponents; simplifying radical expressions; adding, subtracting, multiplying and dividing radical expressions; solving equations involving radical expressions. This unit concludes with complex numbers.

*EXAMINATION 3*: COVERS CHAPTERS 7 & 8     *(1 to 1.5 hours)*

# 9     QUADRATIC EQUATIONS, INEQUALITIES, & FUNCTIONS     *(3 hours)*

*Topics to be covered include*: solving quadratic equations by the square root property, completing the square, and the quadratic formula; vertical parabolas. This unit concludes with quadratic and rational inequalities.

# 11  NONLINEAR FUNCTIONS, CONIC SECTS, & NONLINEAR SYS    *(1.5 hours)*

**Chapter 11 Nonlinear Functions, Conic Sections, and Nonlinear Systems**         (1.5 hours)

*Topics to be covered include*: second degree inequalities whose graphs involve circles and parabolas only.

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*REFVIEW FOR FINAL EXAMINATION*: **CHAPTERS 2 − 11.5**         *(1 to 1.5 hours)*

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*COMPREHENSIVE FINAL EXAMINATION*: **CHAPTERS 2 − 11.5**         *(1 to 1.5 hours)*

**Examinations/Quizzes:**  There will be four tests, three or four quizzes, and a final exam. If four quizzes are given, one quiz grade may be dropped.

**Evaluation of Students:**  The Final Course Average will be calculated as follows:

$$\text{F.C.A.} = .50\ \frac{(E1+E2+E3+E4)}{4} + .15(Q) + .25(F) + .10(\text{lab})$$

Generally, without a curve, the final course grade is determined by the following scale:

<u>Final Course Average</u>

| | |
|---|---|
| 90-100 | A |
| 80-89 | B |
| 70-79 | C |
| 60-69 | D |
| 0- 59 | F |

A student scoring less than 50% on the final exam will receive a D or an F for the course regardless of his or her average on one-hour exams.

**Policy on make-up Exam:**   There will be no make-up examinations.

**Policy on Cheating:**  Cheating on examination or homework can result in total dismissal from the college.  One warning will be given to any student suspected of cheating.  A second violation will result in the student being withdrawn from the course with a grade of F and possible total dismissal from the college.  Note:  Any talking during examination will be considered cheating.

**Policy on Attendance:**  Starting with the first class meeting of the third week of classes, a student will be administratively withdrawn upon reaching five absences.  If you miss five classes and I've heard nothing from you, I will drop you immediately.

**ADA STATEMENT:**  HCCS and I are committed to compliance with the Americans with Disabilities Act.  If you have a documented disability (e.g., physical, learning, psychiatric, vision, hearing, etc.), or if you need assistance in documenting your disability, please visit the Northwest Disability Support Services Office, to arrange reasonable accommodations at the beginning of each semester.  Faculty is authorized to provide only the accommodations requested by the Disability Support Services Office.

## Suggested Homework Problems

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|---|---|
| Sec 2.1 | 1 – 8 all, 9 – 59 every other odd, 61, 63, 65 |
| Sec 2.2 | 1 – 6 all, 7 – 51 every other odd |
| Sec 2.3 | 1 – 27 odds, 29 – 57 every other odd |
| Sec 2.5 | 1 – 8 all, 9 – 51 every other odd, 53, 63, 67 |
| Sec 2.7 | 1 – 4 all, 5 – 69 every other odd |
| Sec 3.1 | 1 – 12 all, 13 – 49 every other odd |
| Sec 3.2 | 1 – 15 all, 17 – 37 odds, 39 – 59 every other odd, 63, 71 |
| Sec 3.3 | 1 – 14 all, 15 – 29 odds, 31 – 67 every other odd, 75, 77 |
| Sec 3.4 | 1 – 6 all, 7 – 33 odds |
| Sec 3.5 | 1 – 4 all, 5 – 73 odds, 77 |
| Sec 3.6 | 1 – 8 all, 9 – 47 every other odd |
| Sec 4.1 | 1 – 9 all, 11 – 53 every other odd, 65, 75 |
| Sec 5.1 | 1 – 6 all, 7 – 15 odds, 17, 19 – 29 odds, 31, 33 – 57 odds, 59, 63 – 87 odds, 89 – 125 every other odd, 127 – 149 odds |
| Sec 5.3 | 1 – 7 odds, 31 – 36 odds |
| Sec 5.4 | 1 – 4 all, 5 – 83 every other odd |
| Sec 5.5 | 1 – 4 all, 5 – 41 odds |
| Sec 6.1 | 1 – 57 odds, 59, 65 |
| Sec 6.2 | 1 – 4 all, 5 – 49 odds, 59, 61, 63 |
| Sec 6.3 | 1 – 6 all, 7 – 51 odds, 59 |
| Sec 6.4 | 1 – 71 odds |
| Sec 6.5 | 1 – 2 all, 3 – 49 odds, 51, 57, 65 |
| Sec 7.1 | 1 – 8 all, 9 – 19 odds, 21 – 24 all, 25 – 59 every other odd, 61 – 87 every other odd |
| Sec 7.2 | 1 – 6 all, 7 – 19 every other odd, 21 – 37 every other odd, 38, 39 – 73 every other odd |
| Sec 7.3 | 1 – 19 odds, 27 |
| Sec 7.4 | 1 – 25 odds, 40, pp 414 – 415, 1 – 29 every other odd |
| Sec 7.5 | 1 – 4 all, 5 – 21 odds, 23 – 30 all, 33, 35, 39, 45, 47, 51 |
| Sec 8.1 | 1 – 12 all, 13 – 35 odds 45 – 57 odds |

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|---|---|
| Sec 8.2 | 1 – 10 all, 11 – 29 odds, 31, 33 – 45 odds, 47 – 69 odds, 91 |
| Sec 8.3 | 1 – 5 all, 7 – 59 odds, 60, 61 – 91 odds, 93, 99, 111 |
| Sec 8.4 | 1 – 4 all, 5 – 39 odds, 45, 53 |
| Sec 8.5 | 1 – 6 all, 7 – 95 every other odd, 103 – 109 odds, p 485, 1 – 25 odds |
| Sec 8.6 | 7, 9, 13, 17, 21, 23, 27, 29, 33, 37, 45, 49 |
| Sec 8.7 | 1 – 6 all, 7 – 25 odds, 27 – 37 every other odd, 41 – 67 odds, 87 |
| Sec 9.1 | 1 – 4 all, 5 – 23 every other odd, 27, 29, 31 – 65 every other odd, 69 |
| Sec 9.2 | 1 – 4 all, 5 – 45 every other odd, 59 |
| Sec 9.6 | 5, 7, 9, 11, 13, 17, 19, 23, 25, 33, 37, 39 |
| Sec 9.7 | 1, 7, 11, 15, 23, 33, 35, 43, 47 |
| Sec 11.5 | 5, 7, 11, 15 |