Intermediate Algebra

COURSE OUTLINE FOR MATH 0312
(REVISED AUGUST 13 2011)

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Course CRN: 27402   Tues & Thurs.   Codwell Hall Rm, 213   From 9.00am – 11.00am.   Fall 2014

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. **Students must pass a departmental final examination 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
The duration of this course is 8 weeks. The course will move at a fast pace so that the topics in the curriculum can be completed by the end of the semester. Students who have not taken and passed Math 0308 will experience significant difficulties in this course. **mymathlab is required for this course**. **All students must register on the myMathlab and should practice on it daily.**

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

Textbook: Lial, Margaret L.; Hornsby, John; McGinnis, Terry, INTERMEDIATE ALGEBRA (11th Ed). Addison Wesley: Boston, 2012.

myMathlab; All students must sign-up. All home-work problems are on myMathlab. Students should work on their Home-work assignments daily so as to finish them before the due dates and times. The due dates and times are set electronically. Work submitted after the set date and time will be rejected by the computer and a score of zero will be recorded.

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

Course Student Learning Outcomes (SLO)
1. Solve algebraic equations and inequalities involving rational expressions, radicals, quadratics, or linear expressions.
2. Examine and interpret the linear and quadratic graphs of equations and inequalities.
3. Solve application problems.
4. Use and interpret function notation in both algebraic and graphical contexts.

Learning outcomes
Students will:
1.1 add, subtract, multiply and divide polynomials
1.2 factor polynomials
1.3 add, subtract, multiply and divide rational expressions
1.4 simplify complex fractions
1.5 solving equations involving rational expressions
1.6 simplify equations involving rational exponents and simplify radicals
1.7 add, subtract, multiply, divide expressions involving radicals and solve radical equations
1.8 add, subtract, multiply and divide complex numbers
1.9 solve quadratic equations by factoring, completing the square, quadratic formula and square root property
1.10 solve systems of linear equations in two variables
2.1 graph linear equations & linear inequalities in two variables
2.2 find the slope of a line & write its equation
2.3 graph quadratic functions and inequalities
3.1 solve word problems
4.1 recognize functional notation & evaluate functions

Course Outline: The lecture schedule contained in this outline is suggested for your usage. Instructors are free to modify the schedule to meet their needs. However, all the sections listed below must be covered. It is suggested that the even numbered problems be used as examples in class and allow the students to practice the odd numbered problems for homework.

CHAPTER	Approximate Time
SECTION NUMBERS	TOPICS

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.

RECOMMEND EXAMINATION 1: **COVERS CHAPTER 2 & 3**   *(1 to 1.5 hours)*

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 a 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.

RECOMMEND EXAMINATION 2: **COVERS CHAPTERS 4, 5 & 6**   *(1 to 1.5 hours)*

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.

RECOMMEND 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.

***RECOMMEND EXAMINATION 4*: CHAPTERS 9 & SECT 11.5**   *(1 to 1.5 hours)*

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

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

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 are relevant to any of the course objectives.

2. Each student should receive a copy of the instructor's course syllabus during the first week of class.

3. A minimum of three in class tests and a comprehensive final departmental examination must be given. All students must take the final examination.

4. All major tests should be announced at least one week in advance.

5. The final examination 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 might 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.*

Exams:

There will be three class exams and a final exam in the course. The final will constitute 40% of the course grade. The three class exams will constitute 30% of the course grade while the Home-work assignments on myMathlab will constitute 30% of the course grade. Exam dates will be announced one week in before the exam.

Resource Materials:

Any student enrolled in Math 0312 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 and student assistants, and offers tutorial help, videotapes and computer-assisted drills. Also available is a student solutions manual that may be obtained from the bookstore.

Instruction Methods:

The instructor will begin each class with questions concerning the material discussed and the assigned homework problems. Lectures on new materials will follow and students will be given problems to work-on in class. Students must attend class so as not to miss-out on topics covered. **Students who are absent are responsible for all the**

materials covered during their absence. <u>Also, students should not miss exam days

because there will be no make-ups</u>. Students are encouraged to work the review

exercises at the end of each chapter and use the Learning Resource Center (tutorials) at

HCC North-East College campuses frequently.

Final Examination:

The final examination is departmental and consists of 33 multiple-choice problems. The

problems cover only the material required in this course. <u>60% score is required to pass</u>.

Academic Dishonesty:

Students should guard against dishonesty in the work they present for grading. Working

together is good and it is encouraged, but student should not just copy another student's

work and turn-in as their own work. To do that is dishonest and fraudulent.

Classroom Behavior:

The college expects that all students will follow the college guideline on cell phone use.

Please mute your phone or turn it off before entering the classroom. Student cannot take

or make phone calls inside the classroom. It is very disrupting for students to be going in

and out of the class during class time to take or make phone calls. The instructor is

required not to allow such behavior. Student should not disrupt the class by talking when

the instructor is in the process of teaching. Offender will be excused from the class for

not following these guidelines.

Americans with Disabilities Act (ADA):

Students needing accommodations due to a documented disability should contact the

ADA counselor for their college as soon as possible. To all documented disabled

students, all efforts will be made to comply with the prescribed accommodation by the

ADA counselor. It is recommended that you put a clause in your course syllabus that

addresses the disabled student. Submit an accommodation letter from the ADA office.