



**Mathematics**  
**Northeast College**

Math 2412: Precalculus

CRN 11835– Fall/2016

Distance Education

4 hour lecture course / 64 hours per semester/ 12 weeks

Textbook: Precalculus, 5th Edition, by Robert Blitzer

ISBN-13: 978-0-321-83734-9

**MML Course ID: afaneh28315**

**Instructor:** Mr. Mohammad Afaneh

**Instructor Contact Information:** [mohammad.afaneh@hccs.edu](mailto:mohammad.afaneh@hccs.edu) and 713-718-2163

**Office location and hours:** Northline Room#321/ By appointment.

**Course Description**

Math 2412: Precalculus. Topics include elementary theory of functions and equations, analytic geometry, vectors, introductory logic, mathematical induction, sequences and finite series.

**Prerequisites**

Math 1314: Pass with a “C” or better AND Math 1316: Pass with a “C” or better or Departmental approval

**Course Goal**

This course is intended primarily to prepare students for calculus. It can also be used for general mathematics credit.

**Course Student Learning Outcomes (SLO)**

1. Demonstrate and apply knowledge of properties of functions.
2. Recognize and apply algebraic and transcendental functions and solve related equations.
3. Apply graphing techniques to algebraic and transcendental functions.
4. Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.
5. Prove trigonometric identities.
6. Solve right and oblique triangles.
7. Evaluate limits analytically

**Learning objectives**

Students will:

1. Develop and use various problem-solving techniques.
2. Recognize functions as ordered pairs.
3. Determine the graph of an algebraic equation or function.
4. Understand synthetic division.
5. Develop partial fraction decomposition.
6. Find the zeros of real functions
7. Solve polynomial equations.
8. Utilize the six basic trigonometric functions.
9. Apply the Law of sines and the Law of cosines for various types of situations.
10. Verify various trigonometric identities.
11. Find the powers and roots of complex numbers using DeMoivre’s Theorem.
12. Understand basic vectors (2 dimensional).
13. Convert points in a rectangular coordinate system to polar coordinates.
14. Recognize algebraic formulas relating to circles, parabolas, ellipses, and hyperbolas.
15. Use translation of axes, rotation of axes, and polar equations of conics.

16. Recognize the use of arithmetic and geometric sequences.
17. Use summation notation to represent a series.
18. Understand and use the Binomial theorem.
19. Understand mathematical induction.
20. Understand the basic concepts of limits.

### Core Objectives

Given the rapid evolution of necessary knowledge and skills and the need to take into account global, national, state, and local cultures, the core curriculum must ensure that students will develop the essential knowledge and skills they need to be successful in college, in a career, in their communities, and in life. Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

**Critical Thinking Skills:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.

**Communication Skills:** to include effective development, interpretation and expression of ideas through written, oral and visual communication.

**Empirical and Quantitative Skills:** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

### CALENDAR

| Exams      | Date   | Location                         |
|------------|--|----------------------------------|
| Exam One   | Oct 06 & 07 & 08 <b>Covers Unit I &amp; II</b>             | Proctored at 3100 Main St.       |
| Exam Two   | Oct 27 & 28 & 29 <b>Covers Unit III</b>                    | Online MML                       |
| Exam Three | Nov 17 & 18 & 19 <b>Covers Unit IV</b>                     | Online MML                       |
| Final Exam | Dec 2 <sup>nd</sup> & 3 <sup>rd</sup> <b>Comprehensive</b> | Proctored at Central Campus SJAC |

### Instructional Methods

Online Via MyMathLab at [www.coursecompass.com](http://www.coursecompass.com) , all work is done in MML, we are using Canvas for communication only.

### Student Assignments

Homework -----20%

Exam One -----20% Taken at DE Testing Center

Exam Two-----20%

Exam Three-----20%

Final Exam-----20% Taken at DE Testing Center

Total-----100%

#### Assessments

Final Cumulative Grade Average =  $0.20 \times \text{HW} + 0.2 \times \text{Exam 1} + 0.2 \times \text{Exam 2} + 0.2 \times \text{Exam 3} + 0.20 \times \text{Final Exam}$

#### 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.

#### Contact Information:

Cynthia De Los Santos, MA, LMFT, Northeast College  
713-718-8322

#### HCC Policy Statement: Title IX

HCC is committed to provide a learning and working environment that is free from discrimination on the basis of sex which includes all forms of sexual misconduct. Title IX of the Education Amendments of 1972 requires that when a complaint is filed, a prompt and thorough investigation is initiated. Complaints may be filed with the HCC Title IX Coordinator available at 713 718-8271 or email at [oie@hccs.edu](mailto:oie@hccs.edu).

Title IX of the Education Amendments of 1972 requires that institutions have policies and procedures that protect students' rights with regard to sex/gender discrimination.

Information regarding these rights are on the HCC website under Students-Anti-discrimination. Students who are pregnant and require accommodations should contact any of the ADA Counselors for assistance.

It is important that every student understands and conforms to respectful behavior while at HCC. Sexual misconduct is not condoned and will be addressed promptly. Know your rights and how to avoid these difficult situations.

Log in to [www.edurisksolutions.org](http://www.edurisksolutions.org). Sign in using your HCC student email account, then go to the button at the top right that says Login and enter your student number.

#### HCC Policy Statement: Academic Honesty

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, transporting, or soliciting 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 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.

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 "lost" 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 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 Nov 07, Monday 2016.**

### **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 work weekly on their HW and reading.**

### **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

### **Instructor Requirements**

**All Students are required to read the assigned readings and do homework as well as taking exams.**

### **Grading Scale**

90 - 100 = A  
80 - 89 = B  
70 - 79 = C  
60 - 69 = D  
Below 60 = F

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

All personal communication devices (any device with communication capabilities including but not limited to cell phones, blackberries, pagers, 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 to not be on the student desk during examinations. Usage of such devices during exams is expressly prohibited during examinations and will be considered cheating (see academic honesty section above).

### **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:

Any student enrolled in Math 2412 at HCCS has access to the Academic Support Center where they may get additional help in understanding the theory or improving their skill. The Center is staffed with mathematics faculty and student assistants, and offers tutorial help. A Chapter Tests preparation video CD comes with the text. A Student's Solution Manual and MyMathLab are also available

Free tutoring is available in **Room#411**. 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.

### EGLS<sub>3</sub> -- Evaluation for Greater Learning Student Survey System

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term. Visit [www.hccs.edu/EGLS3](http://www.hccs.edu/EGLS3) for more information.

### Administration contact information

#### College - Level Math Courses

|                   |                  |           |              |                              |
|-------------------|------------------|-----------|--------------|------------------------------|
| Chair of Math     | Jaime Hernandez  | SW Campus | 713-718-2477 | Stafford, Scarcella, N108    |
| - Secretary       | Tiffany Pham     | SW Campus | 713-718-7770 | Stafford, Scarcella, N108    |
| Math Assoc. Chair | Clen Vance       | CE Campus | 713-718-6448 | San Jacinto Building, Rm 369 |
| Math Assoc. Chair | Ernest Lowery    | NW Campus | 713-718-5512 | Katy Campus Building, Rm 112 |
| Math Assoc. Chair | Mahmoud Basharat | NE Campus | 713-718-2438 | Codwell Hall Rm 105          |

#### Developmental Math Courses

|                        |                    |           |              |                                |
|------------------------|--------------------|-----------|--------------|--------------------------------|
| Chair of Dev. Math     | Susan Fife         | SE Campus | 713-718-7241 | Felix Morales Building, Rm 124 |
| - Secretary            | Carmen Vasquez     | SE Campus | 713-718-7056 | Felix Morales Building, Rm 124 |
| Dev. Math Assoc. Chair | Marisol Montemayor | SE Campus | 713-718-7153 | Felix Morales Building, Rm 124 |
| Dev. Math Assoc. Chair | Jack Hatton        | NE Campus | 713-718-2434 | Northline Building, Room 321   |

For issues related to your class, please first contact your instructor.

If you need to contact departmental administration, then contact the appropriate Associate Chair.

If further administrative contact is necessary, then contact the appropriate Department Chair.

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### APPROXIMATE TIME

**Unit I – Factoring with negative rational exponents  
Difference Quotient**

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### TEXT REFERENCE

**Section:** Addendum 1  
**Section:** 1.3 p. 180-1

**Partial Fractions****Section: 7.3****(3 hours)**

Review Topics include the following: Graphs and graphing utilities, lines in the plane, slope, functions, polynomial functions of higher degree, synthetic division, real zeros of polynomial functions, and the intermediate value theorem. Required topics are: Factoring with negative rational exponents, finding the difference quotient, and partial fraction decomposition.

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**Unit II – Trigonometry (review)****Sections: {4.2, 4.5 - 4.7} (Review)****Analytic Trigonometry (review)****Sections: {5.1 – 5.3} (Review)****Analytic Trigonometry****Sections: 5.4, 5.5****{5 hours at most for review}****(4 hours)**

This unit contains Trigonometric Functions, the unit circle, graphs of the trigonometric functions, inverse trigonometric functions, verifying identities, sum and difference formulas, double angle and half-angle formulas, sum-to-product and product-to-sum formulas, and solving trigonometric equations.

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**Unit III – Applications of Trigonometry****Sections: Chapter 6****(12 hours)**

This unit includes Law of Sines, Law of Cosines, Polar coordinates, graphs of Polar equations, DeMoivre's Theorem, vectors, and the dot product.

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**Unit IV – Conic Sections and Analytic Geometry****Sections: Chapter 9****(15 hours)**

Topics include the ellipse, the hyperbola, the parabola, rotation of axes, parametric equations, and conic sections in polar coordinates.

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**Unit V – Sequences, Induction, and Probability****Sections: 10.1 – 10.5****(14 hours)**

This unit contains Sequences and summation notation, arithmetic sequences, Geometric Sequences and Series, Mathematical Induction, and The Binomial Theorem.

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**Unit VI – Introduction to Calculus****Sections: 11.1 – 11.4****(12 hours)**

This unit contains an introduction to limits using tables and properties, continuity, and an introduction to derivatives.