Mathematics

Northeast College

Math 2412: Pre-calculus
CRN 41942 – Spring/2015
Northline, RM#223 | 11 AM to 1:00PM | TuTh
4 hour lecture course / 64 hours per semester/ 16 weeks
Textbook: Precalculus, 4rd Edition, by Robert Blitzer
ISBN-13: 978-0-321-55984-5
MyMathLab Course ID: afaneh44671.

Instructor: Mohammad Afaneh

Instructor Contact Information: 713-718-2163 / mohammad.afaneh@hccs.edu

Office location and hours: Room 321. / Hours 1 PM to 3PM – T Th or 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. Represent and manipulate algebraic and trigonometric functions and relations algebraically, graphically, and numerically, including partial fraction decomposition and finding zeroes of functions.
2. Engage in algebraic and trigonometric problem solving and modeling.
3. Synthesize algebraic and trigonometric facts and laws into proofs.
4. Analyze and manipulate equations between various two dimensional systems such as rectangular, polar, vector representations, conic systems and axes manipulations, as well as solving equations in these systems.
5. Investigate and perform summations and predictions on geometric, algebraic and binomial sequences and series

Learning outcomes
Students will:
1.1 Develop and use various problem-solving techniques.
1.2 Recognize functions as ordered pairs.
1.3 Determine the graph of an algebraic equation or function.
1.4 Understand synthetic division.
1.5 Develop partial fraction decomposition.
1.6 Find the zeros of real functions
1.7 Solve polynomial equations.
1.8 Utilize the six basic trigonometric functions.
2.1 Apply the Law of sines and the Law of cosines for various types of situations.
3.1 Verify various trigonometric identities.
3.2 Find the powers and roots of complex numbers using DeMoivre's Theorem.
4.1 Understand basic vectors (2 dimensional).
4.2 Convert points in a rectangular coordinate system to polar coordinates.
4.3 Recognize algebraic formulas relating to circles, parabolas, ellipses, and hyperbolas.
4.4 Use translation of axes, rotation of axes, and polar equations of conics.
5.1 Recognize the use of arithmetic and geometric sequences.
5.2 Use summation notation to represent a series.
5.3 Understand and use the Binomial theorem.
5.4 Understand mathematical induction.
5.5 (Optional) Understand the basic concepts of limits.

CALENDAR

Units	Dates
Test #1 Unit I (7 sections)	TBA
Test #2 Unit II (7 sections)	TBA
Test #3 Unit III (7 sections)	TBA
Test #4 Unit IV and V (6 sections)	TBA
Comprehensive Final Examination	May 12, Tuesday

Instructional Methods

Math is a subject cannot be learned by observation, therefore, you must become an active participant, read the text, pay attention in class, and most importantly you must work the problems *EVERY DAY*! So you do not get behind!! This will require a considerable commitment of time and effort from you. Typically, the successful student in college can count on 3 hours of independent study for every hour in the classroom.

Student Assignments

HOMEWORK Policy: All homework must be completed using MyMathLab by logging into www.coursecompass.com. You need to have the access code or you can buy it online as well. The course ID is afaneh44671.

Grading Policy:

Your final grade for the course will be evaluated according to the following ratio:
1. Three in-class examinations ……..... 20% Each
2. Homework……15%
3. **Final** examination (cumulative)…….…… 25%.

TOTAL---------- 100%

The Final Course Average (FCA) formula is:
FCA = (T1+T2+T3) (0.2) + HW (0.15) + Final (0.25)

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

Final Average	90 ≤ Avg ≤ 100	80 ≤ Avg < 90	70 ≤ Avg < 80	60 ≤ Avg < 70	Avg < 60
Final Course Grade	A	B	C	D	F

MAKE-UP POLICY: Tests must be taken on the specified day. *No MAKE-UP* examinations will be given. The final examination grade will be substituted for one missed test only, regardless of reason. If a second test is missed, the score for that test is zero; thus, more weight will be given to the final examination than would be the case if all examinations were taken.
CALCULATORS POLICY: You could use scientific on tests.

Assessments

1. Three in-class examinations ……..... 20% Each
2. Homework…… 15%
3. **Final** examination (cumulative)…….…… 25%.

TOTAL----------100%

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 Kim Ingram at 713.718.8146. To visit the ADA Web site, please visit 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.

Cheating is not allowed.

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 is March, 24, 2015 Tuesday 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
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

Practice is absolutely essential to the mastery of mathematics. This course requires diligent and consistent work, and the only way to learn math is to work problems. If you get behind, you may jeopardize your chance for success. Be prepared to ask questions about any problems you are unable to work and any material in the text you do not understand. Whenever possible, try to read the sections to be covered before the lecture period. To succeed in mathematics, you must realize that there are no short cuts to learning this important subject; you must work hard.

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:
Free tutoring is available at Northline Campus Room 421. Additional help is also available through **www.hccs.askonline.net** and 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. 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.

APPROXIMATE TIME	TEXT REFERENCE
Unit I – Algebra (Review)	**Sections:** {1.2 – 1.5, 1.7, 1.9, 2.4, 2.5, 2.6}
Unit I – Partial Fractions	**Section:** 7.3
(8 hours)	

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. The unit concludes with partial fraction decomposition.

Unit II – Trigonometry (review) and Analytic Trigonometry
Sections: {4.2, 4.5, 4.6, 4.7}
5.1 – 5.5
(10 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.

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

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

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

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

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.

Unit VI – Introduction to Calculus (Optional) **Sections:** 11.1 – 11.4
(6 hours)
This optional unit contains an introduction to limits using tables and properties, continuity, and an introduction to derivatives.