COURSE SYLLABUS
College Algebra / MATH 1414
Personalized Instruction
Spring 2012

Math/Science Learning Center
Location: P330
Telephone: 972-273-3500
Office Hours:
Monday - Thursday: 8:00 am - 8:00 pm
Friday: 8:00 am - 4:30 pm

This course syllabus is intended as a set of guidelines for MATH 1414. Both North Lake College and your instructor reserve the right to make modifications in content, schedule, and requirements as necessary to promote the best education possible within prevailing conditions affecting this course.

Instructor Information:
Instructor’s Name: Robert McGaughey
Email Address: rmcgaughey@dcccd.edu
Office Phone Number: 972-273-3500
Office Location: N/A
Office Hours: N/A

Course Information (Department Syllabus)
Course title: College Algebra
Course number: MATH 1414
Section number: 7071
Credit hours: 4
Class meeting time: N120 925AM to 1040AM MWF
Attendance at this scheduled time is mandatory.

Course description: This course is a study of relations and functions including polynomial, rational, exponential, logarithmic, and special functions. Other topics include absolute value equations and inequalities, complex numbers, circles, systems of equations and inequalities, sequences and series, matrices, theory of equations, proofs, and applications.

Course prerequisites: DMAT-0093 or DMAT-0099 (Intermediate Algebra) with an A, B, or C, or an appropriate score on a mathematics placement test.
Required Textbook and Materials

1) College Algebra MLP Package for North Lake College
   Includes Access to MyLabsPlus and College Algebra Text, 4th ed, by Beecher & Penna
   ISBN: 1256121819

   *Note: MyLabPlus access code is NOT the same as the MyMathLab access code. The MyLabsPlus is accessed with the MyMathLab – Plus access code.

2) Calculators
   You will be allowed to use calculators on all tests. Graphing calculators (such as the TI-83 or TI-84 Plus) are recommended. Calculators such as the TI-89 & TI 92, which perform algebraic operations, are not allowed. You may check out a TI-84 calculator for the midterm and final at North Lake College. Please verify the calculator policy for other campuses by calling the appropriate testing center.

Technical Support

MyLabsPlus support website: http://www.mylabsplus.com/support

A link to this site is available on eCampus.

Technical support number for eCampus: 972-669-6402
Technical support number for MyLabsPlus: 1-888-883-1299

Course Objectives

To develop a further understanding of the process of learning mathematics, the factors which can interfere with learning, and to continue to build the algebraic skills necessary for future courses or for utilization in a career or other endeavor.

The objective of the mathematics component of the core curriculum is to develop a quantitatively literate college graduate. Every college graduate should be able to apply basic mathematical tools in the solution of real-world problems.

Specific Course Learning Outcomes

1. The student will set up and solve a variety of equations and inequalities from real world applications. EEO’s 1, 2. CCIC Critical Thinking. General Education Outcomes: 1.1, 2.1, 2.2

2. The student will use the geometric concepts from the distance formula, midpoint formula, and slope as a rate of change to derive equations of lines and circles. EEO’s 1, 2, 3. CCIC Critical Thinking. General Education Outcomes: 1.1, 2.1, 2.2

3. The student will use the library of functions to graph transformations, perform operations and compositions on the functions along with their inverses. EEO’s 1, 2, 5. CCIC Critical Thinking. General Education Outcomes: 1.1, 2.1, 2.2
4. Students will incorporate various theorems to solve and graph polynomial and rational equations and inequalities. EEO’s 1, 3, 5. CCIC Critical Thinking. General Education Outcomes: 1.1, 2.1, 2.2

5. The student will apply the properties of exponents and logarithms to solve applications involving compound interest, exponential growth and decay and other real world applications. EEO’s 1,7. CCIC Critical Thinking. General Education Outcomes: 1.1, 2.1, 2.2

6. The student will solve applications involving systems of linear equations and inequalities using algebra and graphs. EEO’s 1,2, 4. CCIC Critical Thinking. General Education Outcomes: 1.1, 2.1, 2.2

7. The student will use the definitions of sequences and series to set up arithmetic and geometric sequences and find the sums for both finite and infinite series. EEO’s 1,2, 6. CCIC Critical Thinking. General Education Outcomes: 1.1, 2.1, 2.2

**Means of Assessment of Course Learning Outcomes**

Course Learning Outcomes will be assessed using a variety of means.

1. Pre-tests, mastery tests, and written exams will be given to assess each Learning Outcome.
2. Homework will be assigned and assessed using the software component and reviewed by the instructor.
3. Individual meetings will be set up with students to assess what learning outcomes the student has mastered and those that they have not yet learned. An action plan will be created for the student to address those learning outcomes that have not yet been mastered.
4. Students will complete projects and learning activities that will address specific course learning outcomes.

**Course Outline**

See Appendix ~ Course Calendar, Learning Activities and Table of Objectives

**Evaluation Procedures**

The learning outcomes will be assessed through Group Work (projects), Homework, Quizzes and Exams. The final grade will be based on the following:

**Computing Your Grade:**

- Daily work 15% Includes homework, quizzes, Mastery Tests, attendance, projects
- Written Chapter tests 65%
- Final Exam 20%
Grading Scale
Your course grade will be determined by the final grade average based on the following:
A = 90 – 100  B = 80 – 89  C = 70 – 79  D = 67 – 69  F = 0 – 66

HOMEWORK

Each student is required to purchase the online component (called MyLabsPlus) that comes with a new book.

Homework is the most important learning tool in a course.
- It reinforces classroom instruction.
- It provides an immediate and personal measure of your competence in the course.

The instructor’s role of facilitating learning is greatly enhanced for the student who has attempted the homework. The classroom environment is more favorable for learning when the student has studied the material in the text/software site, has tried to work the problems, and uses the classroom to get supplementary information and assistance that is not available in the text/software site.

Time Requirements:
- You can expect to spend a minimum of 12 hours per week on this class.
- The 12 hours = 4 hours of class time + at least 8 additional hours outside of class working through the material and homework.
- If you cannot donate this amount of time to math homework, your success will be diminished.

Students should maintain a HW notebook.
- This means that you should copy the problem, work the problem, and enter your answer in MyLabsPlus.
- Maintaining a HW notebook will give you more examples to review when preparing for an exam.
- The notebook will also help you practice the proper way to communicate and show your work.
- You may be asked to present your written HW at any time throughout the semester.
- You should label each section, copy the problem, neatly show your work vertically, and clearly indicate your final answer.
- Homework will be counted in the Daily Work Ave. The Daily Work Ave. counts as 15% of your final course grade.

Go to the eCampus classroom for the following documents:
1) Guidelines for Homework Assignments and All Tests and
2) Chapter Summary

Project/Learning Activities
- Periodically you will be expected to complete a project and/or additional assignments.
● If you are absent on the day these assignments are given, it is your responsibility to get the information from eCampus and turn it in to your instructor on the next class day.
● A late penalty may apply.
● These assignments will count as a part of your daily work grade.

Attendance Policy

All students are expected to attend all classes at the scheduled time. The WX grade (see details below) requires consistent classroom attendance. Any student missing more than 10 classes in the time from January 17 to May 4 will not be considered for a WX.

TESTS

There are three types of tests: pre-tests, mastery tests and written chapter tests.

● All pre-tests and mastery tests will be taken at home using MyLabsPlus
  - The pre-test will generate personalized homework specifically for you.
  - The mastery test will help determine your readiness to take the written test and will generate a study plan of objectives that need more review.
● All written tests will be taken in the testing center.
  - The written tests are the main part of your course grade.
  - The pre-test, mastery test and study plan are designed to prepare you to succeed on the written chapter test.
  - To take the written tests in the testing center, students must have a signed “Test Request” form from the instructor. Tests taken without the instructor’s permission will not be graded and must be taken again.
● All mastery tests and written tests require mastery (70% or better). If the score is less than 70%, additional problems will be assigned to address the needs. A retake will be assigned.
● Retakes will have a maximum recorded score as follows:
  1st retake: maximum recorded score is 75%
  2nd retake or more: maximum recorded score is 70%
● All written tests will be graded according to the Guidelines for Homework Assignments and All Tests (see Appendix).
● There are 5 written chapter tests and a required final exam.
● An optional midterm exam can be taken to replace the lowest test score from the first half of the course (test 1, 2 or 3). If taken, it will be taken after chapter 3.
● The final exam will be taken after all coursework has been completed.

Special note on written tests:

● All written chapter tests will be based on homework problems that are assigned throughout the semester.
● All chapter tests will test your understanding of the course concepts that are covered throughout the semester and through various forms of questioning and application problems. This means the exams are not identical to problems you have worked but designed to test your understanding of the concepts presented.
● All written tests will be taken in the testing center.
● Students will login to the appropriate online location and the Test Center personnel will
enter the required password for the exam.

- Once the exam comes up on the screen, the student will write out their work on paper supplied by the Test Center. You should request graph paper as needed.
- The paper portion of the exam will be attached to the Test Permit Form
- The written tests are the largest single portion of the final course grade.
- All written tests will be graded according to the Guidelines for Homework Assignments and All Tests (see Appendix).
- You are required to use proper algebraic techniques on each test. Improper algebraic steps may result in a loss of all or partial points.
- All work must be shown. Answers only will receive little, if any credit.
- **Written tests will be 65% of your course grade.**

You will not be allowed under any circumstances to take more than 1 test during the week of April 30.

**Taking Tests in the Testing Center (A 425)**

- You may not bring personal items into the Test Center. This includes bags, cell phones and pagers. Coin-reimbursable (quarter) lockers are available for student use. Please do not share lockers.
- Please show courteous and cooperative behavior while using the services provided by the Testing Center.
- **Do not bring children to the testing center.** You must make arrangements for the care of your children prior to your exam date. The police department will be notified of any unattended children.
- **Do not** take any testing materials with you when you leave the Testing Center. This includes the test, answers, charts, scratch paper. These items will be attached to your test.
- **Academic Dishonesty**
  The Dallas County Community District has established procedures and guidelines to protect the security and integrity of all exams. All incidents of academic dishonesty are documented and reported to the instructor, the Director of Testing and the Dean of Student Enrollment.

**Hours of Operation:**

**Monday – Thursday:** 8:30 a.m. – 8:00 p.m.
No tests will be issued after 7:00 p.m. Other cut-off times may be in effect for specific exams by the instructor's direction. All exams collected at 8:00 p.m.

**Friday - Saturday:** 8:30 a.m. – 3:30 p.m.
Other cut-off times may be in effect for specific exams by the instructor's direction. No tests will be issued after 2:30 p.m. All exams collected at 3:30 p.m.

**Sunday: CLOSED**
If your instructor requires you to complete an exam in the Testing Center, be sure to have the following information when you request your test:
1) Instructor’s name
2) Subject and course number…MATH 1414
3) Exam number (1st, 2nd, 3rd, etc.)
4) Exam deadline (Get this information from your instructor. The testing staff can not “look up” this information on computers.)

You should also bring the following supplies:
1) Pencil & Eraser
2) A Test Request Form initialed by your instructor must be completed before entering the Testing center.
3) Only battery operated 4 function, non programmable scientific or TI83/TI84 calculators are allowed (if permitted by instructor).
4) Money for coin-return lockers (quarter). Please do not share lockers.

Important: Government- or school-issued photo identification is required & enforced.

Questions? Please visit the Testing Center (A425) or call 972-273-3160.

New Testing Policy for Mathematics & Science Division:

Students taking tests in math and science will NOT be allowed to leave the testing center or the classroom during a test and return to complete the test.

If you leave, you are finished testing.

If you need special accommodations, you must submit a request to the Disability Services Office in person (A430) or by phone at 972-273-3165. For more information, visit http://www.northlakecollege.edu/services-and-resources/advice-and-assistance/Pages/disability-services.aspx

FINAL EXAM
The final exam is comprehensive and required by all students. The exam will be taken in the classroom at the time specified in the Official Final Exam Schedule.

GRADE ALTERNATIVES
1. Receive a grade of an A, B or C ~ must complete all chapters with mastery (100% on homework, 70% or better on each mastery and written chapter test, no minimum requirement on midterm or final).
2. WX ~ Complete chapters 1 through 3 with mastery and at least a 70% on the midterm exam. The midterm is optional.
3. I ~ Incomplete
4. W ~ Student drops the course
5. Student receives a D or an F
WX Details

- **It is mandatory that the student have consistent attendance and work on a regular basis every week. (See Attendance Policy)**
- Allows the student to re-enroll in MATH 1414 Personalized Instruction and begin with chapter four.
- All work for chapters one through three will be saved and transferred to the new MATH 1414 class.
- A student who has been attending class regularly and taking tests regularly *may be eligible* for a WX grade if the first three tests are completed with a 70% average or better.
- Students who receive a WX grade must sign a contract that states what assignments are to be completed and must agree to enroll for a MATH 1414 Personalized Instruction course the next semester to complete the course work.
- The contract must be approved by the last week of the term (May 4 is reserved for WX contracts) and submitted with the final grades.
- The student will have to pay for the course tuition again but will not have to purchase a new code (providing the next semester ends within the one year time frame allowed by the program).
- The WX grade will only be considered and discussed on an individual basis.

Incomplete Details

- Requires instructor permission and consent by the Dean of the department.
- A student who has successfully completed all work with the exception of the last unit test and final exam AND/OR HAS MEDICAL ISSUES OR OTHER EXTREME CIRCUMSTANCES *may* be eligible for an Incomplete grade.
- Only students who have worked consistently and regularly throughout the semester may qualify for an Incomplete.
- The student needs to make individual arrangements with the instructor for plans to finish the course.
- A contract for the Incomplete must be included with the instructor's final grades.
- The contract includes the work to be completed and a grade alternative if the contract is not fulfilled by the stated deadline.
- The student does not have to re-enroll in the course nor buy new materials.

Student receives a D or an F

- Students who do not drop the course must be given a completion grade.
- Those that do not qualify for one of the options listed above will be given the Course Grade they have earned as determined by the course average process listed in the previous section.
- The instructor will use the same grading policy for all students.

**Discipline/ Course/ Department/Policies**

**ABSENCES**
Absences are generally detrimental to one’s performance in a course. You are expected to attend regularly in order that you may increase your chances for a successful semester in algebra.

**TARDIES**
Tardies are strongly discouraged as they are disruptive to the class and thus the students who are
on time. However, it is better to come late than not at all, as long as it is not a habit with one particular individual. If you anticipate a particular problem, please discuss it with me before or after class.

**CELL PHONE USE**
The use of cell phones or other similar devices (such as I-Pods, computers, etc.) is prohibited during class time. You are expected to turn OFF all such devices and put them away and out of sight BEFORE entering the classroom.

**CLASSROOM BEHAVIOR**
Distractive talking or any disorderly conduct is prohibited. Please be courteous of others. A warning will be given for behavior an instructor considers disruptive and if the warning is not heeded, the student will be asked to leave. See Student Code of Conduct for more details.

**SCHEDULE FOR MATH LEARNING CENTER (Math Lab)**
Located in C211.
- 8:00 am – 8:00 pm, Monday – Thursday
- 8:00 am – 2:00 pm, Friday
- 9:00 am – 2:00 pm, Saturday
- CLOSED on Sunday

**INSTITUTIONAL POLICIES**

**ACADEMIC DISHONESTY**
The Student Code of Conduct prohibits academic dishonesty and prescribes penalties for violations. According to this code, which is printed in the college catalog, "academic dishonesty", includes (but is not limited to) cheating, fabrication, facilitating academic dishonesty, plagiarism, and collusion".
Academic dishonesty may result in the following sanctions, including, but not limited to:
1. A grade of zero or a lowered grade on the assignment or course.
2. A reprimand.
3. Suspension from the college.

**NOTIFICATION OF ABSENCE DUE TO RELIGIOUS HOLY DAY(S)**
Students who will be absent from class for the observance of a religious holiday must notify the instructor in advance. Please refer to the Student Obligations section of the college catalog for more explanation. You are required to complete any assignments or take any examinations missed as a result of the absence within the time frame specified by your instructor.

**REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT**
North Lake College provides academic accommodations to students with disabilities, as defined under ADA law. It is the student's choice and responsibility to initiate any request for accommodations. If you are a student with a disability who requires such ADA accommodations, please contact North Lake College's Disability Services Office in person (A430) or by phone at 972-273-3165.
http://www.northlakecollege.edu/resources/disability.html
DROP POLICY
DO NOT DROP UNTIL YOU SPEAK WITH YOUR INSTRUCTOR.
If you are unable to complete this course, you must officially withdraw by April 12, 2012.
Withdrawing is a formal procedure which you must initiate; your instructor cannot do it for you.

All Dallas County Community Colleges charge a higher tuition rate to students registering the third time for a course. This rule applies to the majority of credit and Continuing Education / Workforce Training courses. Developmental Studies and some other courses are not charged a higher tuition rate. Third attempts include courses taken at any DCCCD college since the fall 2002 semester. For further information, go online to: http://www.DCCCD.edu/thirdcourseattempt.

FINANCIAL AID STATEMENT
Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. Students who fail to attend or participate are also subject to this policy.

To apply for financial aid in the DCCCD, students must complete FAFSA (Free Application for Federal Student Aid) on the web at http://www.fafsa.ed.gov.

COUNSELING SERVICES
Counseling services for personal issues are provided to all students currently enrolled at North Lake College. These services are provided by licensed professionals who are bound by confidentiality (within ethical parameters) at no charge. With the assistance of a counselor, students are able to identify, understand, resolve issues and develop appropriate skills. To make an appointment call 972-273-3333 or visit A311.

STOP BEFORE YOU DROP
DO NOT DROP UNTIL YOU SPEAK WITH YOUR INSTRUCTOR.
For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions.
Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: https://www1.dcccd.edu/coursedrops

TSI INFORMATION
TSI (Texas Success Initiative) is the state required assessment program that has replaced TASP. The purpose of TSI is to insure students have the skills to be ready for college level coursework. Dallas County Community College District is allowing students to decide when they will take their developmental coursework. Demonstrated proficiency in skills through completion of DMAT 0093 or a passing score on an assessment instrument is required to move to college level.
math classes. Students must earn an “A”, “B”, or “C” in their developmental class in order to move to the next developmental level or to a college level class.

Effective for Fall Semester 2005, the Dallas County Community Colleges will charge a higher tuition rate to students registering the third or subsequent time for a course. All third and subsequent attempts of the majority of credit and Continuing Education/Workforce Training courses will result in higher tuition to be charged. Developmental Studies and some other courses will not be charged a higher tuition rate. Third attempts include courses taken at any of the Dallas County Community Colleges since the Fall 2002 semester.

Enrollment in developmental courses is subject to other limitations. Students may enroll in a maximum of 27 hours of developmental courses.

For more information go to the DCCCD web site and click on “Paying for College” and then “Third Course Attempt.”

TSI completion of all areas (reading, math, and writing) is required before being awarded a degree. Based on the first testing score, some students may need to re-test in order to complete TSI requirements.

The Academic Skills Center (ASC)
The ASC is designed to provide assistance to students in the following areas:

- Labs for students enrolled in foreign language, Developmental Reading, and ESOL courses. One-on-one tutoring is available.
- The Writing Center can help students clarify writing tasks, understand instructors’ requirements, develop and organize papers, explore revision options, detect grammar and punctuation errors, and properly use and document sources. Rather than merely editing or "fixing" papers, tutors focus on helping students develop and improve their writing skills.
- The Online Writing Lab (OWL) allows students to submit papers to our writing tutors electronically and get feedback within 24-72 hours. The OWL can be accessed through eCampus. After logging on to eCampus, click on the Community Tab at the top. Type "Owl" in the search field and click “Go.” Next, click on the double drop-down arrows next to “NLC-OWL2,” and then click on “Enroll.” Once enrolled, students can receive services from the OWL.

For more information or to schedule a tutoring appointment, come by A-332 or call 972-273-3089.

Food and Drink in the Classroom
The college policy restricts food and drink in the classroom.

General Education Outcomes

North Lake College has comprehensive general education outcomes and assures its graduates are able to meet those outcomes. Our graduates will acquire or improve skills that enable them to be productive citizens, lifelong learners, and effective employees. These skills include oral and written communication, critical/logical thinking, information literacy and technological
competence, ethical and civic values, cultural diversity and global awareness, and workforce and interpersonal skills.

**Outcome 1: Communication Skills**  
Outcome 2: Critical Thinking Skills  
Outcome 3: Information Literacy and Technological Competency  
Outcome 4: Ethical and Civic Values  
Outcome 5: Cultural Diversity and Global Awareness  
Outcome 6: Workforce and Interpersonal Skills

**Exemplary Educational Objectives**  
All core mathematic courses must include a majority (greater than or equal to four) of the seven Exemplary Educational Objectives (EEO) listed below.

1. To apply arithmetic, algebraic, geometric, higher-order thinking, and statistical methods to modeling and solving real-world situations.
2. To represent and evaluate basic mathematical information verbally, numerically, graphically, and symbolically.
3. To expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments.
4. To use appropriate technology to enhance mathematical thinking and understanding and to solve mathematical problems and judge the reasonableness of the results.
5. To interpret mathematical models such as formulas, graphs, tables and schematics, and draw inferences from them.
6. To recognize the limitations of mathematical and statistical models.
7. To develop the view that mathematics is an evolving discipline, interrelated with human culture, and understanding its connections to other disciplines.

[http://www.dcccd.edu/Employees/Departments/EA/Academic+Programs/Core+Curriculum/Faculty+Resources/](http://www.dcccd.edu/Employees/Departments/EA/Academic+Programs/Core+Curriculum/Faculty+Resources/)

**Core Curriculum Intellectual Competencies**  
This course reinforces one of the 6 Core Curriculum Intellectual Competencies defined by the Texas Higher Education Coordinating Board. The CCI identified by the DCCCD which is reinforced by College Algebra is as follows:

**CRITICAL THINKING:** Critical thinking embraces methods of applying both qualitative and quantitative skills analytically and creatively to subject matter in order to evaluate arguments and to construct alternative strategies.
## Learning Activities, Outcomes, and Assessment

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<tr>
<th>1. Learning Activity: Finding the Domain of a Square Root Function - Required</th>
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<tbody>
<tr>
<td>a. <strong>Learning Outcomes:</strong> The student will relate inequalities to the domain of a square root function.</td>
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<tr>
<td>Students will work in groups of two. Each group will turn in only one project. Each student must participate. Groups may work in the classroom (time permitting), but they may require additional time outside the classroom to complete the project.</td>
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<tr>
<td>b. <strong>Assessment:</strong> This project is graded on neatness, accuracy and completeness. Each student will also take a quiz covering the project’s concepts. The quiz will be assigned in MyLabsPlus.</td>
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<tr>
<td>c. <strong>EEO’s and CCIC’s:</strong> EEO’s 1, 5, 7; CCIC: Critical Thinking</td>
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<tr>
<th>2. Learning Activity: Finding the Equation of a Circle - Required</th>
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<tbody>
<tr>
<td>a. <strong>Learning Outcomes:</strong> The student will use the geometric concepts from the distance formula and the midpoint formula to derive the equation of a circle when given two points.</td>
</tr>
<tr>
<td>b. <strong>Assessment:</strong> The project will be assessed based on neatness, accuracy, completeness and precision. Each student will also take a quiz covering the project’s concepts. The quiz will be assigned in MyLabsPlus.</td>
</tr>
<tr>
<td>c. <strong>EEO’s and CCIC’s:</strong> EEO’s 2, 3 and 5; CCIC: Critical Thinking</td>
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<tr>
<th>3. Learning Activity: Calculating Maximum Revenue - Required</th>
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<tr>
<td>a. <strong>Learning Outcomes:</strong> Students will calculate the maximum revenue by interpreting data from a given graph. Students will work in groups of two. Each group will turn in only one project. Each student must participate. Groups may work in the classroom (time permitting), but they may require additional time outside the classroom to complete the project.</td>
</tr>
<tr>
<td>b. <strong>Assessment:</strong> This project is graded on neatness, accuracy and completeness. Each student will also take a quiz covering the project’s concepts. The quiz will be assigned in MyLabsPlus.</td>
</tr>
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<td>c. <strong>EEO’s and CCIC’s:</strong> EEO’s 2, 3, 7; CCIC: Critical Thinking</td>
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<tr>
<th>4. Learning Activity: Visualizing the Graph - Required</th>
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<tr>
<td>a. <strong>Learning Outcomes:</strong> Using the leading-term test, the degree of a polynomial function and a knowledge of y-intercepts, students will match a function with its graph.</td>
</tr>
<tr>
<td>b. <strong>Assessment:</strong> The project will be assessed based on accuracy and completeness. Each student will also take a quiz covering the project’s concepts. The quiz will be assigned in MyLabsPlus.</td>
</tr>
<tr>
<td>c. <strong>EEO’s and CCIC’s:</strong> EEO’s 1, 3, 4, 5, 6, and 7; CCIC: Critical thinking</td>
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<tr>
<th>5. Learning Activity: Curve Fitting - Optional</th>
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<td>a. <strong>Learning Outcomes:</strong> The student will use mathematical modeling to evaluate present circumstances and predict the future.</td>
</tr>
<tr>
<td>b. <strong>Assessment:</strong> The project will be assessed based on neatness, accuracy, completeness and precision.</td>
</tr>
<tr>
<td>c. <strong>EEO’s and CCIC’s:</strong> EEO’s 1, 3, 4, 5, 6, and 7; CCIC: Critical thinking</td>
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</table>
6. Learning Activity: Water Bill Project - Optional
   a. Learning Outcomes:  Students will use mathematical modeling to determine the pricing plan for a local water utility.
   b. Assessment:  The project will be assessed based on neatness, accuracy, completeness and precision.
   c. EEO’s and CCIC’s:  EEO’s 2, 5, and 7:  CCIC Critical thinking  Gen Ed SLOs 1.1, 2.1, 2.2

7. Learning Activity: Composite Functions - optional
   a. Learning Outcomes:  The student will use the graphs of various functions to find the composition of functions.
   b. Assessment:  The project will be assessed based on neatness, accuracy, completeness and precision.
   c. EEO’s and CCIC’s:  EEO’s 2, 3, and 5:  CCIC Critical thinking  Gen Ed SLOs 1.1, 2.1, 2.2

APPENDIX

MATH 1414 Weekly Course Calendar – Spring 2012
Personalized Instruction Format

January 17, 2012  Classes Begin
January 30, 2012  Certification Data
March 1-2, 2012  Employee Development Day ~ No Classes
March 12-16, 2012  Spring Break ~ No Classes
April 6-8, 2012  Holiday ~ No Classes
April 12, 2012  Drop date ~ Last day to drop with grade of W
April 29, 2012  Only one written test allowed after this date
May 4, 2012  Reserved for WX contracts
May 7-10, 2012  Final Exams Only

| Week 1 1-15-12 | • Orientation, Syllabus (online orientation in eCampus-required)  
|                | • Section 1.1 – Introduction to Graphing  
|                | • Section 1.2 – Functions and Graphs |
| Week 2 1-22-12 | • SLO Activity 1 & 2 – located in eCampus Lesson Unit 1  
|                | • Section 1.3 – Linear Functions, Slope, and Applications – power point for Average Rate of Change (eCampus-Lesson Unit 1)  
|                | • Section 1.4 – Equations of Lines and Modeling  
|                | • Calculator tips (eCampus-Lesson Unit 1)  
|                | • Section 1.5 – Linear Equations, Functions, Zeros, and Applications |

MATH 1414 Syllabus Personalized Instruction
<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Assignments</th>
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</table>
| Week 3 | 1-29-12 | - Section 1.6 – Solving Linear Inequalities  
- AND/OR ppt (eCampus -Lesson Unit 1)  
- Review Chapter 1  
- **SLO Quiz I and 2 (MLP)**  
- Mastery Test 1 (MLP)  
- Written **Test 1 in Testing Center**  
- Section 2.1 – Increasing, Decreasing, and Piecewise Functions; Applications |
| Week 4 | 2-05-12 | - Section 2.2 – The Algebra of Functions  
- Section 2.3 – The Composition of Functions  
- Section 2.4 – Symmetry and Transformations |
| Week 5 | 2-12-12 | - Section 2.5 – Variation and Applications  
- Review Chapter 2  
- Mastery Test 2 (MLP)  
- Written **Test 2 in Testing Center**  
- Section 3.1 – The Complex Numbers |
| Week 6 | 2-19-12 | - Section 3.2 – Quadratic Equations, Functions, Zeros, and Models  
- Section 3.3 – Analyzing Graphs of Quadratic Functions  
- **SLO Activity 3 (eCampus –Lesson Unit 3)**  
- Section 3.4 – Solving Rational Equations and Radical Equations |
| Week 7 | 2-26-12 | - Section 3.5 – Solving Equations and Inequalities with Absolute Value  
- Review Chapter 3  
- **SLO Quiz 3 (MLP)**  
- Mastery Test 3 (MLP)  
- Written **Test 3 in Testing Center**  
- Section 4.1 – Polynomial Functions and Models |
| Week 8 | 3-04-12 | - **Midterm Test – optional** (Covers Chapter 1, 2, & 3)  
- Taken in Testing Center – can replace test 1,2 or 3.  
- Section 4.2 – Graphing Polynomial Functions  
- **SLO Activity 4 (eCampus –Lesson Unit 4)**  
- Section 4.3 – Polynomial Division; The Remainder and The Factor Theorem  
- Section 4.4 – Theorems of Zeros of Polynomial Functions |
| 3-11-12 | | Spring Break |
| Week 9 | 3-18-12 | - Section 4.5 – Rational Functions  
- Section 4.6 – Polynomial Inequalities and Rational Inequalities |
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<th>3-25-12</th>
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| **Review Chapter 4**  
**Mastery Test 4 (MLP)**  
**Written Test 4 in Testing Center**  
**SLO Quiz 4 (MLP)** |

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<th>Week 11</th>
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</table>
| **Section 5.1 – Inverse Functions**  
**Section 5.2 – Exponential Functions and Graphs**  
**Section 5.3 – Logarithmic Functions and Graphs**  
**Section 5.4 – Properties of Logarithmic Functions** |

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<th>Week 12</th>
<th>4-08-12</th>
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</table>
| **Review Chapter 5**  
**Mastery Test 5 (MLP)**  
**Written Test 5 in Testing Center**  
**Section 6.1 – System of Equations in Two Variables** (Pre-requisite material)  
**Section 6.2 – System of Equations in Three Variables**  
**Calculator handout using rref to solve systems (eCampus Lesson Unit 6)** |

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<tr>
<th>Week 13</th>
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</table>
| **Section 6.3 – Matrices and Systems of Equations**  
**Calculator handout using rref to solve systems (eCampus Lesson Unit 6)**  
**Section 6.6 – Determinants (Cramer’s Rule – optional)**  
**Section 6.7 – Systems of Inequalities and Linear Programming** |

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<tr>
<th>Week 14</th>
<th>4-22-12</th>
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</table>
| **Review Chapter 6**  
**Mastery Test 6 – No written chapter 6 test – material ON FINAL.**  
**Section 8.1 – Sequences and Series**  
**Section 8.2 – Arithmetic Sequences and Series** |

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<thead>
<tr>
<th>Week 15</th>
<th>4-29-12</th>
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</table>
| **Section 8.3 – Geometric Sequences and Series**  
**Mastery Test Chapter 8. No written chapter 8 test – material ON FINAL.**  
**Final Exam Review** |

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<tr>
<th>Week 16</th>
<th>5-06-12</th>
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</table>
| **Final Exam - See Final Exam Schedule for Day and Time**  
(Final Exam Covers Chapter 1, 2, 3, 4, 5, 6, and 8)** |
# List of Course Objectives

Note: Pre-reqs should be reviewed by students as needed – concepts will not be covered in detail in this course.

## Chapter 1: Graphs, Functions, and Models

### Section 1.1: Introduction to Graphing
- Plot points... OMIT (Pre-req)
- Determine whether an ordered pair is a solution of an equation... OMIT (Pre-req)
- Find x- and y-intercepts of an equation... OMIT (Pre-req)
- Graph equations
  - Only linear equations are graphed at this point.
  - Quadratic equations will be graphed later.
- Find the distance between two points in the plane
- Find the midpoint of a segment
- Find an equation of a circle with a given center and radius
- Given an equation of a circle in standard form, find the center and the radius
- Graph equations of circles: SLO 1 Activity

### Section 1.2: Functions and Graphs
- Determine whether a correspondence or a relation is a function
- Find function values, or outputs, using a formula or a graph
- Graph functions
- Determine whether a graph is that of a function
- Find the domain and the range of a function: SLO 2 Activity
  - Focus on linear, absolute value, quadratic, square root, cube root, and rational.
- Solve applied problems using functions

### Section 1.3: Linear functions, Slope, and Applications
- Determine the slope of a line given two points on the line... OMIT (Pre-req)
- Solve applied problems involving slope, or average rate of change - See Powerpoint supplement located in eCampus: Lesson Unit 1
- Find the slope and the y-intercept of a line given the equation y = mx + b or f(x) = mx + b
- Graph a linear equation using the slope and the y-intercept
- Solve applied problems involving linear functions

### Section 1.4: Equations of Lines and Modeling
- Determine equations of lines
- Given the equations of two lines, determine whether their graphs are parallel or perpendicular
- Model a set of data with a linear function

### Section 1.5: Linear Equations, Functions, Zeros, and Applications
- Solve linear equations
- Solve applied problems using linear models
- Find zeros of linear functions

### Section 1.6: Solving Linear Inequalities
- Solve linear inequalities
- Solve compound inequalities. Review AND / OR Powerpoint supplement -eCampus
- Solve applied problems using inequalities
## Chapter 2: More on Functions

### Section 2.1: Increasing, Decreasing, and Piecewise Functions; Applications
- Graph functions, looking for intervals on which the function is increasing, decreasing, or constant, and estimate relative maxima and minima
- Given an application, find a function that models the application.
- Find the domain of the function and function values
- Graph functions defined piecewise

### Section 2.2: The Algebra of Functions
- Find the sum, the difference, the product, and the quotient of two functions, and determine the domains of the resulting functions
- Find the difference quotient for a function
  - Focus on linear and quadratic functions

### Section 2.3: The Composition of Functions
- Find the composition of two functions and the domain of the composition
- Decompose a function as a composition of two functions - optional

### Section 2.4: Symmetry and Transformations
- Determine whether a graph is symmetric with respect to the x-axis, y-axis, and the origin
- Determine symmetry using visual and algebraic tests. See Powerpoint supplement for algebraic test for symmetry – eCampus.
- Determine whether a function is even, odd, or neither even nor odd
- Given the graph of a function, graph its transformation under translations, reflections, stretching, and shrinking

### Section 2.5: Variation and Applications
- Find equations of direct variation, inverse variation, and combined variation given values of the variables
- Solve applied problems involving variation

## Chapter 3: Quadratic Functions and Equations; Inequalities

### Section 3.1: The Complex Numbers
- Perform computations involving complex numbers
  - Powers of $i$ greater than the fourth power will be covered in Trigonometry and PreCalculus.

### Section 3.2: Quadratic Equations, Functions, Zeros, and Models
- Find zeros of quadratic functions and solve quadratic equations by using the principle of zero products, by using the principle of square roots, by completing the square, and by using the quadratic formula
- Solve applied problems using quadratic equations

### Section 3.3: Analyzing Graphs of Quadratic Functions
- Find the vertex, the axis of symmetry, and the maximum or minimum value of a quadratic function using the method of completing the square
- Graph quadratic functions
- Solve applied problems involving maximum and minimum function values: SLO 3 Activity
- Activity for Discussion in Class: “Visualizing the Graph” on page 266. Emphasize the shape of the graph can be determined by analyzing the equation. SLO 4 activity
### Section 3.4: Solving Rational Equations and Radical Equations
- Solve rational equations
- Solve radical equations

### Section 3.5: Solving Equations and Inequalities with Absolute Value
- Solve equations with absolute value
- Solve inequalities with absolute value

### Chapter 4: Polynomial Functions and Rational Functions

#### Section 4.1: Polynomial Functions and Models
- Determine the behavior of the graph of a polynomial function using the leading-term test
- Factor polynomial functions and find their zeros and their multiplicities
- Solve applied problems using polynomial models

#### Section 4.2: Graphing Polynomial Functions
- Graph polynomial functions
- Use the Intermediate Value Theorem to determine whether a function has a real zero between two given real numbers

#### Section 4.3: Polynomial Division; The Remainder Theorem and the Factor Theorem
- Perform long division with polynomials and determine whether one polynomial is a factor of another
- Use synthetic division to divide a polynomial by \( x-c \)
- Use the Remainder Theorem to find a function value \( f(c) \)
- Use the Factor Theorem to determine whether \( x-c \) is a factor of \( f(x) \)

See “Connecting the Concepts” on page 325.

#### Section 4.4: Theorems about Zeros of Polynomial Functions
**NOTE: These objectives will be covered in detail in PreCalculus.**
- Find a polynomial with specified zeros
- For a polynomial function with integer coefficients, find the rational zeros and the other zeros, if possible
- Use Descartes’ rule of signs to find information about the number of real zeros of a polynomial function with real coefficients; optional

#### Section 4.5: Rational Functions
- For a rational function, find the domain and graph the function, identifying all of the asymptotes
- Solve applied problems involving rational functions

#### Section 4.6: Polynomial Inequalities and Rational Inequalities
- Solve polynomial inequalities
- Solve rational inequalities

**Know both the algebraic approach and visual (graphical) approach.**
Algebraic approach required on test.

### Chapter 5: Exponential Functions and Logarithmic Functions

#### Section 5.1: Inverse Functions
- Determine whether a function is one-to-one, and if it is, find a formula for its inverse
- Simplify expressions of the type \((f \circ f^{-1})(x)\) and \((f^{-1} \circ f)(x)\)

#### Section 5.2: Exponential Functions and Graphs
- Graph exponential equations and exponential functions
- Solve applied problems involving exponential functions and their graphs
<table>
<thead>
<tr>
<th>Section 5.3: Logarithmic Functions and Graphs</th>
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</thead>
<tbody>
<tr>
<td>• Find common logarithms and natural logarithms with and without a calculator</td>
</tr>
<tr>
<td>• Convert between exponential equations and logarithmic equations</td>
</tr>
<tr>
<td>• Change logarithmic bases</td>
</tr>
<tr>
<td>• Graph logarithmic functions</td>
</tr>
<tr>
<td>• Solve applied problems involving logarithmic functions</td>
</tr>
</tbody>
</table>

**Section 5.4: Properties of Logarithmic Functions**

- Convert from logarithms of products, powers, and quotients to expressions in terms of individual logarithms, and conversely
- Simplify expressions of the type $\log_a a^x$ and $a^{\log_a x}$

**Section 5.5: Solving Exponential Equations and Logarithmic Equations**

- Solve exponential equations
- Solve logarithmic equations

**Section 5.6: Applications and Models: Growth and Decay; Compound Interest**

- Solve applied problems involving exponential growth and decay
- Solve applied problems involving compound interest

**Chapter 6: Systems of Equations and Matrices**

**Section 6.1: Systems of Equations in Two Variables**

**Section 6.2: Systems of Equations in Three Variables**

- Solve systems of linear equations in three variables (Pre-req – limited review)
- Use systems of three equations to solve applied problems
  - **Focus is on setting up the system of equations. Students will solve these problems using technology and matrices in section 6.3. Calculator steps posted in eCampus.**
- Model a situation using a quadratic function

**Section 6.3: Matrices and Systems of Equations**

- Solve systems of equations using matrices – focus on using technology to solve; rref – steps posted in eCampus

**Section 6.4: Matrix Operations**

**Section 6.5: Inverses of Matrices**

**Section 6.6: Determinants and Cramer’s Rule**

- Evaluate determinants of square matrices
  - **Focus on 2x2**
- Use Cramer’s rule to solve systems of equations - optional

**Section 6.7: Systems of Inequalities and Linear Programming**

- Graph linear inequalities
- Graph systems of linear inequalities
- Solve linear programming problems

**Section 6.8: Partial Fractions**

**Chapter 8: Sequences, Series, and Combinatorics**

**Section 8.1: Sequences and Series**

- Find terms of sequences given the nth term
- Look for a pattern in a sequence and try to determine a general term…OMIT
- Convert between sigma notation and other notation for a series
- Construct the terms of a recursively defined sequence

<table>
<thead>
<tr>
<th>Section 8.2: Arithmetic Sequences and Series</th>
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</thead>
<tbody>
<tr>
<td>- For any arithmetic sequence, find the nth term when n is given and n when the nth term is given; and given two terms find the common difference and construct the sequence</td>
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<tr>
<td>- Find the sum of the first n terms of an arithmetic sequence</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 8.3: Geometric Sequences and Series</th>
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</thead>
<tbody>
<tr>
<td>- Identify the common ratio of a geometric sequence, and find a given term and the sum of the first n terms</td>
</tr>
<tr>
<td>- Find the sum of an infinite geometric series, if it exists</td>
</tr>
</tbody>
</table>

**Student Guidelines for Written Assignments**

Writing mathematics is a lot like writing a composition paper. There is an introduction (the problem), body (work/steps), and a conclusion (the answer). Your work must flow in a clear, precise and logical order. You must use the proper notation and use the properties, theorems, and rules correctly.

Listed below are the expectations and guidelines for every assignment. Your grade will be based upon how well you follow these guidelines. The goal of these guidelines is to help you become a better thinker and presenter which will be beneficial for any career you choose.

**Expectations for all written assignments:**

1. If you use a spiral notebook and tear out the pages, you need to trim off the “shards” before turning in the assignment. Loose-leaf paper is preferred.

2. Your name, course number, and chapter and section from the text (if applicable) should be written in the upper right-hand corner of the first page. Each assignment should be stapled in the upper left-hand corner of the page.

3. The problem number or name of the assignment should be written down for each problem assigned. Next include a summary of the problem and directions. Be sure to include all the given information in your summary and a picture of the problem if necessary.

4. If the problem requires you to introduce variables in order to solve it, you must clearly define the variables. Variables must represent **numerical** quantities, not objects. Be sure to include the units of the variables (for example, feet, pounds, minutes, etc).

5. For word problems you will need to set up the equation(s) that model(s) the problem using the defined variables.

6. Write the steps of the problem down the left-hand side of the paper with each step directly under the previous one. Show every step. Don’t skip a step even if you may think it is easy. The steps should be clear and follow a logical order. If numeric computations are necessary, do them neatly on the right-hand side of the paper.
7. Make sure that every statement you write is a true statement and uses the correct notation.

8. Check your answer to make sure it is reasonable/correct with respect to the problem.

9. State your final answer using a complete sentence and include the correct unit of measure (i.e. inches, feet, minutes, square feet, etc).

10. Skip at least 1 line between each problem.

For detailed examples of required work, see “Guidelines for All Tests and Assignments” document posted in your eCampus classroom.

Go to the eCampus classroom for the following documents:
1) Guidelines for Homework Assignments and All Tests and
2) Chapter Summary