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This course syllabus is intended as a set of guidelines for College Algebra. 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 the prevailing conditions affecting this course.

**Instructor Information**

**Instructor’s Name:** Sky Harris  
**Email Address:** sharris1@dcccd.edu  
**Emergency only number:** Mathematics Department 972-273-3500; contact instructor by e-mail

**Course Information**

**Course title:** College Algebra  
**Course number:** MATH 1314 Sections 73007 & 73008 and NCDM 0071 Section 73001  
**Credit hours:** three (3)  
**Class meeting time:**  
- Sections 73001 & 73007 – 8:35am-10:50am  
- Section 73008 – 11:00am-12:20pm
**District Course description:** This course is an in-depth study and applications of polynomial, rational, radical, exponential, logarithmic, absolute-values and piecewise-defined functions, and systems of equations using matrices. Also covered are the graphing calculator, non-linear inequalities, sequences and series, circles, the Binomial Theorem and a review of the classification of the real number systems.

**ACGM description:** In-depth study and applications of polynomial, rational, radical, exponential and logarithmic functions, and systems of equations using matrices. Additional topics such as sequences, series, probability, and conics may be included.

**Course prerequisites:** DMAT-0093 or DMAT-0310 (Intermediate Algebra) or equivalent 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
   - **Note:** MyLabPlus access code is **NOT** the same as the MyMathLab access code
   - **The MyLabsPlus is accessed with the MyMathLab – Plus access code.**
   - Student ID number and email address listed in eConnect will be uploaded into the MyLabsPlus software to provide the student access to the course materials. You can modify your email address and password once you have logged into the software the first time. If you have questions or concerns contact the math division office at 7mathofc@dcccd.edu.

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 which are taken in class at North Lake College.

**Technical Support for eCampus and MyLabsPlus**

- MyLabsPlus support website:  http://www.mylabsplus.com/support
- A link to this site is available in your course 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.

Course Outline
Please see Appendix I attached to this syllabus for a detailed course outline.

Computing Your Grade—Evaluation Procedures of Course
The course learning outcomes will be assessed through Group Work, a Project, Homework, Mastery Tests, SLO Activities, SLO Quizzes, and Exams. The final grade will be based on the following:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>5%</td>
</tr>
<tr>
<td>Homework on MLP</td>
<td>10%</td>
</tr>
<tr>
<td>Mastery Tests &amp; Quizzes on MLP</td>
<td>10%</td>
</tr>
<tr>
<td>Group Work</td>
<td>5%</td>
</tr>
<tr>
<td>5-Written Chapter Exams &amp; 1-Project</td>
<td>60%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>10%</td>
</tr>
</tbody>
</table>

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
What happens in the classroom is only a part of the course. You have to put time in outside of class—homework. Your degree of success in the course will depend on how much effort you are able to give to work outside of class. That will depend on the time you are willing to give and the other activities that require your time—work, other courses, family, etc.

Read the section to be covered and try some of the problems BEFORE you come to class. Research has found that to be successful in a course (A, B, or C) students have to spend 2 hours out of class for every hour in class. Do the math! Do you have that much time?

MyLabsPlus Homework, Mastery Tests and SLO Quizzes are required assignments.

"Homework should be completed before the chapter test is taken."

Students should maintain a HW notebook.
- Label each section and each problem, copy the problem, work the problem, and circle the answer or, if using MLP, enter your answer in MyLabsPlus.
- Show your steps to communicate what you did.
- You “may be” asked to present your written HW at any time throughout the semester.

Attendance
Attendance is necessary to pass this class. See policy on page 6.
Roll will be taken every class period.
Mastery Tests:
- You will be required to take a mastery test before each written exam.
- The mastery tests will serve as your test review for each written test.
- You will have limited attempts and a deadline to take each mastery test.
- Your deadline will be announced in class.
- The highest grade on each mastery test will be used to determine your mastery test average.

Written Tests (See "Important Limits on testing" below):
- All written tests will be taken in the testing center (See Testing Center later in this document.)
- 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 you have done your work on will be attached to the Test Permit Form
- You must show all your work to receive full-credit.
- A correct answer with no work shown may result in no credit.
- The instructor reserves the right to make test schedule changes. All tests will be announced at least one week in advance.
- If you are unable to take a test on schedule, make prior arrangements with the instructor, if possible.

Important limits on testing--read now before you have a problem:

No one will be allowed under any circumstances to take more than 2 tests of any kind during the week before final exams.

No testing is allowed in the testing center during finals week. (Reserved for on-line courses and placement testing.)

Retests are available on Chapter Tests. The highest possible grade on a retest is 70%.

Final Exam
The final exam is comprehensive. The exam will be taken in the classroom at the time specified in the Official Final Exam Schedule.
Discipline/ Course/ Department/Policies

Due to the nature of this course, attendance is necessary to pass this class. I will take roll every class period and it is expected that you follow the guidelines set forth in the Class Attendance Policy.

This portion of the final course grade will be determined by the number of unexcused absences, using the following table:

<table>
<thead>
<tr>
<th>Absences</th>
<th>0 - 2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>100</td>
<td>95</td>
<td>90</td>
<td>85</td>
<td>80</td>
<td>75</td>
<td>70</td>
<td>65</td>
<td>60</td>
<td>55</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Absences</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23 +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>45</td>
<td>40</td>
<td>35</td>
<td>30</td>
<td>25</td>
<td>20</td>
<td>15</td>
<td>10</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Students will be able to earn back attendance credit by attending the Math Success Center. Lost attendance points can be earned back by attending the Math Success Center.

- Each 1.5 hours of active work in the Math Success Center will = one missed day of class.
- Active work in the center must be documented by the center staff. Make-up sessions in the Math Success Center must be completed within two weeks of the absence.
- Attendance in the lab cannot be used for extra credit.

Tardies

- Don't be late to class.
- It is rude to the instructor and other students.
- It causes you to miss part of the classwork.
- Everyone will be late on occasions--even the instructor. Do not make a habit of it.
- If you anticipate an ongoing problem, please discuss it with the instructor.

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.

Cell Phone Use

The use of cell phones or other similar devices is prohibited during class time. You are expected to turn OFF all such devices BEFORE entering the classroom. You may be asked to leave class if your cell phone causes you or others to be distracted in class; i.e. contact calls or texting.

Math Success Center

The Math Success Center (C207) provides intensive assistance to students enrolled in developmental (credit or CE) mathematics courses or College Algebra (Math 1314) at North Lake College. Students must show a North Lake College I.D.:
• This Center provided and promotes activities that are connected with success in mathematics.
• Students can make up class absences.
• They can learn how to study math and manage their time;
• Receive specialized tutoring from seasoned faculty;
• Learn how math relates to their lives; and
• Experience the benefits of working with a study group.

**Hours:** Mon-Thurs 9:30am – 7:00pm; Fri-Sat 9:00am – 2:00pm; CLOSED on Sunday

**Math Learning Center**
The Math Learning Center (C211) provides generalized instructional services for students enrolled in North Lake MATH and DMAT courses. Students must show a North Lake College I.D. These include:
• Tutoring in all math courses taught at North Lake College;
• Computers that may be used by students enrolled in courses that have an Internet component such as homework systems (MyLabsPlus, ConnectMath). This lab is restricted to students working on MATH or DMAT courses;
• Graphing calculators and textbooks that are available for use in center;
• Graph Stamps so students can make their own graph paper; and
• A quiet area to study.

**Hours:** Mon-Thurs 8:00am – 9:00pm; Fri-Sat 9:00am – 2:00pm; CLOSED on Sunday

**Testing in the Testing Center**
• You will take chapter tests in the Testing Center, Room A425, on or before the regularly scheduled test dates.
• To test you will need to have the following information:
  1. Instructor’s name
  2. Subject, course number, and section number (ex: Math 1314-73456)
  3. Exam number (1st, 2nd, 3rd, etc.)
  4. Exam deadline (Get this information from your instructor. The testing staff cannot look up this information on computers).
• You should also bring the following supplies:
  1. Pencil
  3. Government or school issued photo identification is required & enforced.
  4. Only battery operated 4 function, non programmable scientific or TI83/TI84 calculators are allowed (if permitted by instructor). The memory on your calculator will be cleared.

**Testing Center Hours (A 425)**
• The Testing Center normal hours are Mon – Thurs: 8:30 a.m. to 8 p.m. and Fri and Sat: 8:30 a.m. to 3:30 p.m. Important: hours and days may vary due to holidays or other events, please verify the Testing Center will be open before you arrive.
• Questions? Please visit the Testing Center (A 425) or call 972-273-3160.

**Testing Center Policies (additional)**
• No personal items in the Testing Center. This includes bags, cell phones, and pagers.
• Please show courteous and cooperative behavior while using the services provided by the Testing Center.
• NO children in the Testing Center. No exceptions. 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. (To do so constitutes Academic Dishonesty.)

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".

1) The Vice-President of Academic & Student Affairs may initiate disciplinary proceedings against a student accused of academic dishonesty.
2) Academic dishonesty includes, but is not limited to, cheating on a test, plagiarism and collusion.
3) Cheating on a test includes:
   a) Copying from another student’s test paper;
   b) Using, during a test, materials not authorized by the person giving the test;
   c) Collaborating with another student during a test without permission to do so;
   d) Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of an un-administered test.
   e) Substituting for another student, or permitting another student to substitute for you to take a test; and
   f) Bribing another person to obtain an un-administered test or information about an un-administered test.

4) “Plagiarism” means the appropriation of another’s work (ideas and/or words) and the unacknowledged incorporation of that work in one’s written work offered for credit. Quotes not identified as quotes constitute a form of plagiarism even if the borrowed ideas are documented.

5) “Collusion” means an unauthorized collaboration with another person in preparing written work offered for credit.

PENALTY for Academic Dishonesty: 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 (A430)
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

Administrative Withdrawal
Students with valid extenuating circumstances may be eligible for an administrative withdrawal by the Dean of the Division in which the course or courses are taught. An administrative withdrawal will not be awarded to students who simply fail to withdraw prior to the last day to receive a “W.” The request for an administrative withdrawal must be made in writing to the Dean of the Division with any supporting documentation attached. This must occur before the last official day of the semester.

Drop Policy
If you are unable to complete this course, you must officially withdraw by April 16, 2015. 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.

STOP BEFORE YOU DROP- It is in your interest to talk to your instructor or an advisor before dropping. There are many alternatives.
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

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 (A430)
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-
The Academic Skills Center (A332)
The Academic Skills Center (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.

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.

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

## MATH 1314 Topics to be covered

*Rev 7-27-14*

## Chapter 1: Graphs, Functions, and Models

Section 1 is mostly pre-requisite material that should be reviewed.  
In Section 1 we learn to relate equations to their graphs. Circles are covered in Chapter 4.  

### Section 1.1: Introduction to Graphing

**Do the following:**
- Graphs of Equations  
  Examples 4, 5  

**Students should know how to use a t-chart to graph basic library of functions.**

### Section 1.2: Functions and Graphs

**Examples 1, 3, 4, 5, 8, 9**
- 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. Check ecampus for slo info.

### Section 1.3: Linear functions, Slope, and Applications

**Examples 1, 2, 3, 6, 7, 9**
- Solve applied problems involving slope,  
- Find the slope and the y-intercept of a line given the equation \( y = mx + b \) or \( f(x) = mx + b \)  
- Solve applied problems involving linear functions

### Section 1.4: Equations of Lines and Modeling

**Examples 1, 2, 3, 4, 5**
- Determine equations of lines  
- Given the equations of two lines, determine whether their graphs are parallel or perpendicular

### Section 1.5: Linear Equations, Functions, Zeros, and Applications

**Examples 5, 8, 10, 11**
- Linear equations: Examples 1-4 are review for students who need it.  
- Solve applied problems using linear models  
- Find zeros of linear functions  
  Important concept: the connection between zeros, intercepts, and solutions.

### Section 1.6: Solving Linear Inequalities

**Examples 1-4**
- Solve linear inequalities  
- Solve compound inequalities  
  **Recap the meaning of AND / OR. See the Powerpoint in eCampus – Lesson Unit 1.**  
- Solve applied problems using inequalities

## Chapter 2: More on Functions

### Section 2.1: Increasing, Decreasing, and Piecewise Functions; Applications

**Examples 1, 2, 4, 6, 7, Postage stamp function (assume each oz. is 49 cents)**
- 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- simple graphs with two linear functions will be tested
- Learning Activity: Water Bill Project or Tax Table ~ optional

<table>
<thead>
<tr>
<th>Section 2.2: The Algebra of Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples 1, 2</td>
</tr>
<tr>
<td>Find the sum, the difference, the product, and the quotient of two functions, and determine the domains of the resulting functions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 2.3: The Composition of Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples 1-3</td>
</tr>
<tr>
<td>Find the composition of two functions and the domain of the composition</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 2.4: Symmetry and Transformations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples 1, 2, 4, 5</td>
</tr>
<tr>
<td>Determine whether a graph is symmetric with respect to the x-axis, y-axis, and the origin</td>
</tr>
<tr>
<td>Review the definition of even and odd functions. These two terms (even and odd) were introduced sometimes in the last few decades to refer to functions that are symmetrical to the y axis (even) and symmetrical to the origin (odd). They appear to be defined at the beginning of upper level texts and never used.</td>
</tr>
<tr>
<td>Given the graph of a function, graph its transformation under translations, and reflections.</td>
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<thead>
<tr>
<th>Section 2.5: Variation and Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples 1-7</td>
</tr>
<tr>
<td>Find equations of direct variation, inverse variation, and combined variation given values of the variables</td>
</tr>
<tr>
<td>Solve applied problems involving variation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 3: Quadratic Functions and Equations; Inequalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 3.1: The Complex Numbers</td>
</tr>
<tr>
<td>Examples 1-3, 5, 6, i raised to the 1st, 2nd, 3rd, and 4th powers,</td>
</tr>
<tr>
<td>Perform computations involving complex numbers</td>
</tr>
</tbody>
</table>

**Powers of i greater than four will not be covered**

<table>
<thead>
<tr>
<th>Section 3.2: Quadratic Equations, Functions, Zeros, and Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples 1-3, 4, 6, 8, 9</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Completing the Square will be used on quadratic equations with a leading coefficient of 1. All quadratic equations can be solved by the Quadratic Formula. If a quadratic expression is factorable, the factors can be found by setting it equal to 0 and using the quadratic formula.</td>
</tr>
<tr>
<td>Solve applied problems using quadratic equations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section 3.3: Analyzing Graphs of Quadratic Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example 4, 5, 6</td>
</tr>
<tr>
<td>The zeros for quadratic function are given by ( x = \frac{-b}{2a} \pm \frac{\sqrt{b^2-4ac}}{2a} ). The point half-way between the zeros has the x coordinate of ( \frac{-b}{2a} ). That is also the x coordinate of the vertex. The y coordinate</td>
</tr>
</tbody>
</table>
of the vertex is \( f \left( \frac{-b}{2a} \right) \). The vertex can be found without completing the square.

- Find the vertex, the axis of symmetry, and the maximum or minimum value of a quadratic function. Use the method outlined above.
- Graph quadratic functions
- Solve applied problems involving maximum and minimum function values: old SLO 3 Activity available in ecampus

### Section 3.4: Solving Rational Equations and Radical Equations
**Examples 1-5**
- Solve rational equations
- Solve radical equations - *Focus on equations with one radical.*

### Section 3.5: Solving Equations and Inequalities with Absolute Value
**Examples 1-4**
- Solve equations with absolute value
- Solve inequalities with absolute value. No rational expressions are used.

### Chapter 4: Polynomial Functions and Rational Functions

#### Section 4.1: Polynomial Functions and Models
**Examples 1-5**

You already know that \( y = ax^2 + bx + c \) opens up for \( a > 0 \) and down for \( a < 0 \). The end behavior of any polynomial function \( y = a_n x^n + a_{n-1} x^{n-1} + \ldots + a_0 \) can be determined by substituting large positive or negative values for \( x \) in the leading term. If substituting a large negative value for \( x \) in the leading term yields a negative number then the graph begins in the 3rd quadrant. If it yields a positive number then the graph starts in the 2nd quadrant. Substituting large positive values of \( x \) in the leading term will, in a similar manner, tell you whether the graph's right end behavior is in the 1st or 4th quadrant.

- Determine the behavior of the graph of a polynomial function using the leading-term test or the method described above.
- Factor polynomial functions and find their zeros and their multiplicities (Test questions will give polynomial functions in factored form.)
- Solve applied problems using polynomial models

#### Section 4.2: Graphing Polynomial Functions
**Examples 1, 3**

- Graph polynomial functions. *Practice graphing by hand. Check using the graphing calculator.*
- Graphing circles. *See handout.* Not yet available,
- Consider characteristics of the graphs of equations and functions. *See handout.*

#### Section 4.3: Polynomial Division; The Factor Theorem
**Examples 1, 2, do the Factor Theorem and "Connecting the concepts" p325**

- 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 Factor Theorem to determine whether \( x-c \) is a factor of \( f(x) \)

#### Section 4.4: Theorems about Zeros of Polynomial Functions....
**Examples 1, 2, 3, 4**

- Find a polynomial with specified zeros
- For a polynomial function with integer coefficients, find the rational zeros and the other zeros, if possible
Section 4.5: Rational Functions
Examples 1-6
• For a rational function, find the domain and graph the function, identify any horizontal or vertical asymptotes

Section 4.6: Polynomial Inequalities and Rational Inequalities—OMIT

Chapter 5: Exponential Functions and Logarithmic Functions

Section 5.1: Inverse Functions
Examples 1-7, 9
• Determine whether a function is one-to-one, and if it is, find a formula for its inverse
  For determining if a function is one-to-one, focus on the horizontal line test and composition of two functions rather than using the definition/proof.

Section 5.2: Exponential Functions and Graphs
Examples 1-6
• Graph exponential equations and exponential functions
• Solve applied problems involving exponential functions and their graphs
  *Stress applications.*

Section 5.3: Logarithmic Functions and Graphs
Examples 1-6, 9, 10, 13
• Find common logarithms and natural logarithms with and without a calculator
• Convert between exponential equations and logarithmic equations
• Graph logarithmic functions
• Solve applied problems involving logarithmic functions

Section 5.4: Properties of Logarithmic Functions
Examples 1-5, 6 (a), 7, 8, 10
• Convert from logarithms of products, powers, and quotients to expressions in terms of individual logarithms, and conversely
• Simplify expressions of the type \( \log_a a^x \).

Section 5.5: Solving Exponential Equations and Logarithmic Equations
Examples 1-4, 6, 7, 9
• Solve exponential equations
• Solve logarithmic equations

Section 5.6: Applications and Models: Growth and Decay; Compound Interest
Examples 1-3, 5
• Solve applied problems involving exponential growth and decay
• Solve applied problems involving compound interest

Chapter 6: Systems of Equations and Matrices

Section 6.1 Omit (Review)

Section 6.2 Systems of Equations in Three Variables
Example 1 Set up and solve using technology or by hand.
Do problems 3 & 5 as a group activity to hand in--use technology or do by hand.

Section 6.3—6.8 OMIT
<table>
<thead>
<tr>
<th>Chapter 8: Sequences, Series, and Combinatorics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section 8.1: Sequences and Series</strong></td>
</tr>
<tr>
<td><strong>Examples 1, 4</strong></td>
</tr>
<tr>
<td>• Find terms of sequences given the nth term</td>
</tr>
<tr>
<td>• Convert between sigma notation and other notation for a series</td>
</tr>
<tr>
<td>A handout will be provided to extend these concepts to arithmetic and geometric sequences and series.</td>
</tr>
<tr>
<td><strong>Sections 8.2-8.6 Omit</strong></td>
</tr>
<tr>
<td><strong>Section 8.7: Binomial Theorem</strong></td>
</tr>
<tr>
<td>Group activity – Example 1: explore patterns generated on p 676 and 677</td>
</tr>
</tbody>
</table>
**Appendix ii**

**MATH 1314 Weekly Course Calendar**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 20</td>
<td>Classes Begin</td>
</tr>
<tr>
<td>February 2</td>
<td>12th day of class</td>
</tr>
<tr>
<td>February 19 &amp; 20</td>
<td>Conference Days – day and evening classes will not meet</td>
</tr>
<tr>
<td></td>
<td>(Friday evening, Saturday and Sunday classes will meet.)</td>
</tr>
<tr>
<td>March 9 – 13</td>
<td>Spring Break – campus closed</td>
</tr>
<tr>
<td>April 3rd</td>
<td>Holiday – campus closed</td>
</tr>
<tr>
<td>April 16</td>
<td><strong>Drop Date – last day to drop with a grade of W</strong></td>
</tr>
<tr>
<td>May 5th</td>
<td>Only one written test allowed after this date</td>
</tr>
<tr>
<td>May 11 - 14</td>
<td>Final Exams Only – see web site for schedule of exams</td>
</tr>
</tbody>
</table>

**Homework for week 1:**

Go to eCampus and complete the following:

1. Getting Prepared for the Course
2. Orientation to Course and MyLabsPlus (MLP)
3. Assignments for Week 1 – posted in eCampus Getting Started Section

*Save yourself some time and frustration and carefully work through the above three assignments before the next class!*

**Week 1**

1-20-15

- Syllabus – highlights – go to eCampus to read syllabus details
- “Are you ready for College Algebra?” - in class diagnostic

**Week 2**

1-26-15

- **SLO 1 Activity: Domain and Range of a Square Root Function**
- Section 1.3 – Linear Functions, Slope, and Applications
- Section 1.4 – Equations of Lines and Modeling

**Week 3**

2-02-15

- Section 1.5 – Linear Equations, Functions, Zeros, and Applications
- Section 1.6 – Solving Linear Inequalities
- **SLO 1 Quiz in MLP - need password**

**Week 4**

2-09-15

- Section 2.1 – Increasing, Decreasing, and Piecewise Functions; Applications
- Section 2.2 – The Algebra of Functions
- Section 2.3 – The Composition of Functions

**Week 5**

2-16-15

- Section 2.4 – Symmetry and Transformations
- Section 2.5 – Variation and Applications
- **No class on Thursday Feb. 19th.**

**Week 6**

2-23-15

- Section 3.1 – The Complex Numbers
- Section 3.2 – Quadratic Equations, Functions, Zeros, and Models
- Section 3.3 – Analyzing Graphs of Quadratic Functions

**Week 7**

3-02-15

- Section 3.4 – Solving Rational Equations and Radical Equations
<table>
<thead>
<tr>
<th>Date</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-09-15</td>
<td>• Spring Break – college closed for the week.</td>
</tr>
<tr>
<td>Week 8</td>
<td>• Section 4.1 – Polynomial Functions and Models</td>
</tr>
<tr>
<td>3-16-15</td>
<td>• Section 4.2 – Graphing Polynomial Functions</td>
</tr>
<tr>
<td></td>
<td>• SLO 3 activity – Analyzing Graphs (Note: there are 5 slo quizzes and two slo activities – one for slo 1 and one for slo 3)</td>
</tr>
<tr>
<td></td>
<td>• Section 4.3 – Polynomial Division; The Remainder and The Factor Theorem</td>
</tr>
<tr>
<td></td>
<td>• Section 4.4 – start – Theorems of Zeros of Polynomial Functions</td>
</tr>
<tr>
<td>Week 9</td>
<td>• Section 4.4 – complete – Theorems of Zeros of Polynomial Functions</td>
</tr>
<tr>
<td>3-23-15</td>
<td>• Section 4.5 – Rational Functions</td>
</tr>
<tr>
<td>Week 10</td>
<td>• Section 4.6 – Polynomial Inequalities and Rational Inequalities – omit</td>
</tr>
<tr>
<td>3-30-15</td>
<td>• SLO 2 &amp; 3 quiz in MLP</td>
</tr>
<tr>
<td></td>
<td>• Section 5.1 – Inverse Functions</td>
</tr>
<tr>
<td></td>
<td>• Section 5.2 – Exponential Functions and Graphs</td>
</tr>
<tr>
<td>Week 11</td>
<td>• Section 5.3 – Logarithmic Functions and Graphs</td>
</tr>
<tr>
<td>4-06-15</td>
<td>• Section 5.4 – Properties of Logarithmic Functions</td>
</tr>
<tr>
<td>Week 12</td>
<td>• Section 5.5 – Solving Exponential Functions and Graphs</td>
</tr>
<tr>
<td>4-13-15</td>
<td>• Section 5.6 – Applications and Models: Growth and Decay; Compound Interest</td>
</tr>
<tr>
<td></td>
<td>• SLO 4 quiz in MLP - required</td>
</tr>
<tr>
<td></td>
<td>• April 16th Last Day to drop – contact instructor first!</td>
</tr>
<tr>
<td>Week 13</td>
<td>• Section 6.2 &amp; 6.3 System of Equations in Three Variables</td>
</tr>
<tr>
<td>4-20-15</td>
<td>• Section 6.3 – Matrices and Systems of Equations - omit</td>
</tr>
<tr>
<td></td>
<td>• Mastery Test 6 – No written chapter 6 test – material not on FINAL exam.</td>
</tr>
<tr>
<td></td>
<td>• SLO 5 quiz in MLP - required</td>
</tr>
<tr>
<td>Week 14</td>
<td>• Section 8.1 – Sequences and Series</td>
</tr>
<tr>
<td>4-27-15</td>
<td>• Section 8.2 – Arithmetic Sequences and Series - omit</td>
</tr>
<tr>
<td></td>
<td>• Section 8.3 – Geometric Sequences and Series - omit</td>
</tr>
<tr>
<td></td>
<td>• Section 8.7 - Binomial Theorem</td>
</tr>
<tr>
<td></td>
<td>• Mastery Test Chapter 8 - No written chapter 8 test</td>
</tr>
<tr>
<td></td>
<td>• NOTE: Material from 8.1 – 8.3 not on Final Exam.</td>
</tr>
<tr>
<td>Week 15</td>
<td>Final Exam Review</td>
</tr>
<tr>
<td>5-04-15</td>
<td>Final Exam Week - See Final Exam Schedule for Day and Time</td>
</tr>
<tr>
<td></td>
<td>(Final Exam Covers Chapter 1, 2, 3, 4, &amp; 5)</td>
</tr>
<tr>
<td>Week 16</td>
<td>Final Exam - See Final Exam Schedule for Day and Time</td>
</tr>
<tr>
<td>5-11-15</td>
<td>(Final Exam Covers Chapter 1, 2, 3, 4, &amp; 5)</td>
</tr>
</tbody>
</table>
Appendix iii

ACGM Learning Outcomes

Upon successful completion of this course, students will:

1. Demonstrate and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses.

2. Recognize and apply polynomial, rational, radical, exponential and logarithmic functions and solve related equations.

3. Apply graphing techniques.

4. Evaluate all roots of higher degree polynomials and rational functions.

5. Recognize, solve and apply systems of linear equations using matrices.

Means of Assessment of Course Learning Outcomes

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

1. A written exam or Mastery test in MyLabsPlus will be given to assess each Learning Outcome.

2. Homework will be assigned and assessed using the software component.

3. Observation of students as they interact in groups and discussions will be used to assess all outcomes.

4. Students will complete projects and learning activities that will address specific course learning outcomes.

Appendix iv

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. Write the section and number of the problem or name of the assignment for each problem. 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, clearly define the variables. Variables must represent **numerical** quantities (George's age), not objects (George). Be sure to include the units: 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. State your final answer using a complete sentence and include the correct unit of measure (i.e. inches, feet, minutes, square feet, etc.).

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. Every statement you write must be a true statement. Use the correct notation.

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

9. 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