

University of New Mexico- Valencia Campus
Department of Mathematics, Engineering, & Science & (MES)
Math 150- Sec. 501- CRN# 35403)
Pre-Calculus
Spring 2017

Instructor: Khaled Kassem (Mr. K) **Phone Number:** 505-925-8609

Email: Use the message tool within UNM LEARN, or khaled@unm.edu

Class Schedule: Tuesday & Thursdays 03:00-04:15PM @ A-129.

Office Room: A-142E.

Office Hours:

Monday: 09:55-11:55 am, 01:20-02:50 pm (Faculty Help), and 04:20-04:50 pm

Tuesday: 04:20-05:20 pm (Math Center Hour)

Wednesday: 09:55-11:55 am, 01:20-02:50 PM (Faculty Help), and 04:20-04:50 pm

Thursday: 04:20-05:20 PM (STEM Center Hour)

Text: *Pre-calculus, 2nd Edition, Sisson*, packaged with *Hawkes Learning System Courseware*.

Calculator: TI 83 plus recommended, but not required and not allowed on exams.

UNM LEARN course URL: <https://learn.unm.edu>. Check this location frequently for messages and announcements. Also, find the syllabus of the course there and print a hard copy for yourself.

Please note the following guidelines for the course:

-Prerequisite: Grade of C (not C-) or better in Math 121

- Grades: Your grade will be based on your performance on the following assignments and exams. Your instructor may also give short in-class quizzes and special homework assignments that will contribute to your grade. To receive a C grade, or better, for this course you must have at least a 70% grade on the final exam **and** a 72% overall average.

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| In-class Quizzes | 100 points |
| | (6 short quizzes with 20 points each, lowest will be dropped) |
| Hawkes Learning System Homework | 100 points |
| 4 in-class tests | 300 points (<i>75 points/test</i>) |
| Final Exam | 200 points |
| Total | 700 points |

Your overall average will be found by dividing your total points by 7 and applying the following measure:

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| A | 90% -100% |
| B | 80% - 89% |
| C | 72% - 79% |
| D | 60%- 70% |
| F | Below 60% |

- Calculator policy: Graphing calculators are **NOT ALLOWED** on any tests, including the Final Exam. A scientific calculator may be necessary on all tests, including the Final Exam. Homework and non-graded work may be done with the help of a graphing calculator. A graphing calculator may be used by the instructor during class as a teaching aid.

- Homework: Your homework is your most important effort in this class; homework is how you actually learn the material that will be on the quizzes and exams. Expect to do 2-3 hours of homework for every hour of class meeting time (on average 6-9 hours per week). Keep all of your homework together in a folder so that if you are having trouble in the course, you can bring it with you when you go to see your instructor or get tutoring. Homework can be computer based or book based or both.

- Attendance: Attendance is mandatory, and if you have *five or more unexcused absences*, you may be *dropped* from the course (we WILL enforce this policy). However, it is **YOUR** responsibility to drop the course if you decide to stop attending classes. If you don't, you may receive an F.

- Missed Exams: If you miss an exam, contact your instructor immediately and provide a note (hardcopy or email) explaining your reason. Provide enough detail so that the instructor can check your excuse. Make-up test will only be given if your excuse is valid and will be more difficult than the timed tests. "I wasn't ready for it" is not a valid excuse. Be aware that make-up exams are more difficult than the original exam. **No exam scores will be dropped.**

- Student Behavior: According with the Code of Conduct as stated in the Policies and Regulations for UNM, student activities that interfere with the rights of others to pursue their education or to conduct their University duties and responsibilities will lead to disciplinary action. This includes any activities that are disruptive to the class and any acts of academic dishonesty. Students are expected to behave in a courteous and respectful manner towards the instructor and their fellow students.

Academic Dishonesty: Academic dishonesty is defined in the 2014-2016 UNM-Valencia catalog, and includes but not limited to copying work from other students. Any student found doing this is subject to disciplinary action, ranging from a reduced or failing grade for the work in question and/or the course, to dismissal from the University.

- Disability Statement: We will accommodate students with documented disabilities. During the first two weeks of the semester, those students should inform the instructor of their particular needs and they should also contact **Equal Access Services** at 925-8560.

- Support Services: The Valencia Campus Library provides a quiet atmosphere for study and is an excellent resource for supplementary materials. Audiotapes and videotapes are available for student use through the library. It will also have a link to all your course syllabi.

The Open Computer Lab (V123) provide free access to word processors, email, Internet access and other software that students may find useful in the course of their studies.

The Learning Center (TLC) can be reached at 925-8907. It provides tutoring at no charge for all UNM-Valencia Campus students. If you feel you need a tutor, you may set up a regular time for tutoring, make occasional appointments for tutoring, or ask to see a tutor on a walk-in basis without an appointment. Tutoring also can be provided through The STEM Center (925-8515). Also, for those who drive from Albuquerque, you may get tutoring for this class at UNM- Main Campus at the CAPS- Center for Academic Program Support; 3rd floor of Zimmerman Library (277-7208).

-Title IX Statement: In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education (see pg 15 - <http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf>). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA **must** be reported to the Title IX Coordinator at the Office of Equal Opportunity

(oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: <https://policy.unm.edu/university-policies/2000/2740.html>

-Important Dates:

01/16(Monday) Martin Luther King, JR. Day (NO Classes)

01/27 (Friday) Last day to add courses or change sections

02/03(Friday) Last Day to Drop without a grade, Last Day to Drop with a Refund

02/10(Friday) Last day to change grading options

March 12-19 Spring Break – No Classes

04/ 14 (Friday) Last day to withdraw without the Dean’s approval

05/ 05 (Friday) Last day to withdraw with the Dean’s approval

Final Exams: Tuesday, May 09, 2017 at 03:00 -05:00 PM in A-129. A 3” by 5” notecard for formulas and a scientific calculator will be allowed.

Math 150 Tentative Course Schedule- Spring 2017

| <u>Week</u> | <u>Topic</u> | <u>Homework</u> |
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| (only odd problems, unless otherwise stated. This suggested homework is only optional, since you will be doing homework on <i>Hawkes Learning System Courseware</i>) | | |
| 1 (1/17) | 3.1 Relations and Functions | 3-90 (multiples of 3) |
| | 3.2 Linear and Quadratic Functions | 1-65 |
| Review: | 1.2 Properties of Exponents and radicals | 3-99 (multiples of 3) |
| | 1.3 Polynomials and factoring | 3-105 (multiples of 3) |
| 2 (01/24) | 3.3 Other Common Functions | 1-41 |
| | 3.4 Variation and Multivariable Functions | 1-47 |
| Review: | 1.4 The Complex Number System | 1-53 |
| 3 (01/31) | 3.5 Transformation of Functions | 1-57 |
| | 3.6 Combining Functions | 1-71 |
| Review: | 1.7 Quadratic Equations | 3-90 (multiples of 3) |
| | 1.8 Rational and Radical Equations | 3-84 (multiples of 3) |
| 4 (02/07) | 3.7 Inverse of Functions | 1-61 |
| | 4.1 Polynomial Equations and Graphs | 1-75 |
| Review: | 2.1 The Cartesian Coordinate System | 3-54 (multiples of 3) & 57-73 |
| | 2.2 Linear Equations in Two Variables | 1-49 |
| 5 (02/14) | <u>Test 1 Over chapters 1, and 3</u> | |
| | 4.2 Polynomial Division and the division Algorithm | 1-61 |
| 6 (02/21) | 4.3 Locating Real Zeros of Polynomials | 3-81 (multiples of 3) |
| | 4.4 The Fundamental Theorem of Algebra | 1-49 |
| Review: | 2.3 Forms of Linear Equations | 1-71 |
| | 2.4 Parallel and perpendicular Lines | 1-59 |

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| 7 (02/28) | 4.5 Rational Functions | 1-71 |
| Review: | 2.6 Introduction to a Circle | 1-55 |
| 8 (03/07) | <u>Test 2 Over Chapters 2, and 4</u> 5.1 Exponential Functions and Their Graphs | 1-57 |
| 9 (03/14) | Spring Break March 12-19, 2017 | |
| 10 (03/21) | 5.2 Applications of Exponential Functions 5.3 Logarithmic Functions and Their Graphs | 1-29 3-81 (multiples of 3) |
| 11 (03/28) | 5.4 Properties and Applications of Logarithm 5.5 Exponential and Logarithmic Equations | 3-99 (multiples of 3) 3-81 (multiples of 3) |
| 11 (03/28) | 10.1 Solving systems by substitution and Elimination 10.8 Non Linear Systems of equations | 3-63 (multiples of 3) 3-60 (multiples of 3) |
| 12 (04/04) | <u>Review</u> <u>Test 3 Over chapters 5, 10.1, and 10.8</u> | |
| 13 (04/11) | 9.1 The Ellipse 9.2 The Parabola | 1-61 1-43 |
| 14 (04/18) | 9.3 The Hyperbola The "Limits" handout | 1-49 |
| 15 (04/25) | The "Limits" handout (Continued) Final Exam Review | |
| 16 (05/02) | <u>Test 4 over chapters 09 and the "Limits" handout.</u> Final Exam Review_(Continued) | |
| 17 (05/09) | <u>[In-Class Final Exam on Tuesday, May 09th, 2017 at 03:00 -15:00 pm]</u> <u>A 3" by 5" notecard for formulas and a scientific calculator will be allowed.</u> | |

Course Goals:

Revised Fall 2015

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| MATH 150: Pre-Calculus (3cr) | By the end of the course, students will be able to communicate clearly the steps to solve problems using the correct notation and terminology. | Algebra II: 3 |
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| By the end of the course, students will be able to solve various kinds of equations, such as polynomial, rational, radical, exponential, logarithmic, and systems of linear and non-linear equations. | Algebra II: 2 |
| By the end of the course, students will be able to analyze and interpret various functions, including construction of their graphs. | Algebra II: 1-2 |
| By the end of the course, students will be able to perform operations on functions: composition, difference quotients, basic operations, inverses, and limits of functions. | Algebra II: 2 |
| By the end of the course, students will be able to demonstrate problem-solving skills for applied problems. | Algebra II: 4 |

List of Student Learning Outcomes (SLO) for Math 150

Course Goal #1: Communication

Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)

SLO 1: Students will be able to use correct mathematical notation and terminology.

SLO 2: Students will be able to read and interpret graphs.

Course Goal #2: Functions

Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)

SLO 1: Students will be able to evaluate functions and difference quotients for a variety of functions.

SLO 2: Students will be able to graph some basic functions; this includes power, root, reciprocal, and piecewise defined functions.

SLO 3: Students will be able to calculate an average rate of change of a function and to interpret its meaning.

SLO 4: Students will be able to shift, and reflect graphs, and to compress and stretch graphs horizontally and vertically.

SLO 5: Students will be able to set up models using functions in word problems.

SLO 6: Students will be able to find extreme values of quadratic functions.

SLO 7: Students will be able to compose functions and to express a given functions as a

composition of two simpler functions.

SLO 8: Students will be able to identify one-to-one functions and find and graph their inverses.

Course Goal #3: Polynomial and Rational Functions

Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)

SLO 1: Students will be able to determine the end behavior and the zeros of polynomial functions. They will be able to use this to graph the function.

SLO 2: Students will be able to divide polynomials and to understand the Division Algorithm.

SLO 3: Students will be able to solve quadratic equations with complex roots.

SLO 4: Students will be able to use the Fundamental Theorem of Algebra and the Complete Factorization Theorem.

SLO 5: Students will be able to find horizontal, vertical, and skew asymptotes of rational functions. They will be able to graph rational functions.

Course goal #4: Exponential and Logarithmic Functions

Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)

SLO 1: Students will be able to graph exponential and logarithmic functions.

SLO 2: Students will be able to solve a variety of exponential and logarithmic equations.

SLO 3: Students will be able to set up exponential growth and decay models and to solve the associated word problems.

Course goal #5: Analytic Geometry

Addresses UNM Core Area 2/HED Area II: Mathematics (Algebra Competencies)

SLO 1: Students will be able to identify and graph the conic sections.

SLO 2: Students will be able to graph parametric equations in two dimensions that involve algebraic functions. They will be able to eliminate the parameter.