MATH 1240: Pre-Calculus – Fall 2019 (Dual Credit)

Instructor: Ariel Ramirez, Ph.D.
Email: aramirez8@unm.edu
Office: LRC 172
Phone: 505-925-8912
OFFICE HOURS: In the Math Center/LRC or by Appointment

COURSE DESCRIPTION: This course extends students' knowledge of polynomial, rational, exponential and logarithmic functions to new contexts, including rates of change, limits, systems of equations, conic sections, and sequences and series. *(3 Credit Hours).*

Prerequisites: Successful completion of Math 121 or minimum ACCUPLACER score of 69-99 (College-Level Math), NEXT GEN score of 249-283 (Advanced A & F), or math ACT score ≥25, or math SAT score ≥570.

COURSE OBJECTIVES:

1. Functions
   (a) Reinforce recognizing a function from its graph and from its algebraic expression.
   (b) Reinforce identification of a one-to-one function graphically and from its algebraic expression.
   (c) Reinforce identification of inverse functions graphically and algebraically.
   (d) Reinforce combining functions arithmetically and compositionally.
   (e) Be able to calculate the average rate of change of a function and depict it graphically.
   (f) Be able to find a limiting value of a function and be able to identify and use the notation that describes this.
2. Graphing
   (a) Reinforce using key characteristics of functions to graph them.
   (b) Be able to graph conic sections from their key characteristics such as foci, eccentricity and asymptotes.
   (c) Be able to identify all functions mentioned from their graphs, describing their key aspects.
3. Solving
   (a) Exponential/Logarithmic equations using the rules of exponents and logarithms.
   (b) Systems of linear equations by elimination.
   (c) Non-linear systems algebraically and graphically.
4. Applications
   (a) Modeling with functions with an emphasis on exponential and logarithmic functions, growth and decay.
5. Sequences and Series
   (a) Understand the concept and notation of a sequence.
   (b) Understand the concept and notation of a series.
   (c) Be able to find limits of basic sequences
   (d) Be able to find sums of basic series.

COURSE MATERIALS:

Textbook: *Pre-Calculus: Mathematics for Calculus*, 7th edition, by Stewart, J., Redlin, L., & Watson, S.

HOMEWORK:

- Homework is assigned as needed throughout the semester.

EXAMS:

- Two exams will be given during the semester and a cumulative final at the end of the semester.

OTHER IMPORTANT INFORMATION:

Equal Access: In accordance with University Policy 2310 and the Americans with Disabilities Act (ADA), academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as I am not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact Accessibility Resource Center at 277-3506 for additional information.

If you need an accommodation based on how course requirement interacts with the impact of a disability, you should contact me to arrange an appointment as soon as possible. At the appointment we can discuss the course format and requirements, anticipate the need for adjustments and explore potential accommodations. I rely on the Disability Services Office for assistance in developing strategies and verifying accommodation needs. If you have not previously contacted them, I encourage you to do so.

If you are a Valencia campus student, contact Equal Access Services at Valencia Campus, Jeanne Lujan at (505)925-8910 or Valencia Student Services. If you are a main campus student, you can receive documentation from the main campus Accessibility Resource Center. I will not guarantee accommodation without the appropriate documentation.

Collegial Behavior: Since I assume you are all adults, I will expect from you respectful adult behavior. Engaging in disruptive or unruly behavior could result in your being asked to leave, at which time you will be counted absent and a referral will be sent to the Associate Dean of Student Services. Continuing to behave in this way could result in your being dropped from the course. Disruptive or unruly behavior includes but is not limited to:

- texting or talking on your cell phone at any time during class,
- continually talking with your neighbor when we are not working on a group activity,
- working on homework from another class,
- reading material or watching media on a mobile device not related to this course or at a time that is inappropriate,
- refusing to participate in the class activities.

Academic Integrity

Having academic integrity is paramount to your success in any class. Plagiarism or cheating is not tolerated. Any instance of this will result in a grade of zero for that assignment. Here is the link to the UNM Academic Dishonesty Policy: https://policy.unm.edu/regents-policies/section-4/4-8.html. The policy states:

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or who otherwise fails to meet the expected standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic Dishonesty is defined as:
"Academic dishonesty" includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

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

COURSE AVERAGES:

Attendance/Class Participation	10%
Homework	40%
Exam (2)	20%
Cumulative Final Exam	30%
Total	**100%**

GRADING SCALE:

Letter Grade	Weighted Average
A	[90%-100%]
B	[80%-90%)
C	[70%-80%)
D	[60%-70%)
F	[0%-60%)

MATH 1240 Topics
Sec. 2.1 What is a Function?
Sec. 2.2 Graphs of Functions
Sec. 2.3 Information from Graphs
Sec. 2.4 Average Rate of Change
Sec. 2.6 Transformations of Functions
Page 237 Modeling with Functions
Sec. 2.7 Combining Functions
Sec. 2.8 One-to-One, Inverse Functions
Sec. 1.6 Complex Numbers
EXAM 1
Sec. 3.1 Quadratic Functions/Models
Sec. 3.2 Polynomial Functions/Graphs
Sec. 3.3 Dividing Polynomials
Sec. 3.4 Real Zeros of Polynomials
Sec. 3.6 Rational Functions
Sec. 10.1 Systems of Linear Equations
Sec. 10.8 Systems of Nonlinear Equations
Sec. 4.1 Exponential Functions
Sec. 4.2 Natural Exponential Function
EXAM 2
Sec. 4.3 Logarithmic Functions
Sec. 4.4 Laws of Logarithms
Sec. 4.5 Exponential /Logarithmic Equations
Sec. 4.6 Modeling with Exponential Functions
Sec. 12.1 Sequences
Sec. 13.1 Limits: Numerically/Graphically
Sec. 13.2 Limits: Algebraically
Sec. 13.3 Tangent Lines and Derivatives
Sec. 13.4 Limits at Infinity
Sec. 11.1 Parabolas
Sec. 11.2 Ellipses
Sec. 11.3 Hyperbolas
Sec. 13.5 Area
FINAL EXAM