

Dual Credit College Algebra SHS and SODA Math 121

Mychael Smith, PhD

Academics 142A
(505) 925-8644
mysmith@unm.edu

Office Hours
MW 10:30-12 and TR 10-12
Or by appointment

1 Overview

Welcome to Math 121. Here is the UNM course description.

Preparation for MATH 150 and 180. The study of equations, functions and graphs, especially linear and quadratic functions. Introduction to polynomial, rational, exponential and logarithmic functions. Applications involving simple geometric objects. Emphasizes algebraic problem solving skills. Meets New Mexico Lower-Division General Education Common Core Curriculum Area II: Mathematics.

2 Course Learning Outcomes

By the end of the course, students will be able to do the following.

- Course Goal #1: Communication Addresses UNM core area 2/HED Area II: Mathematics (Algebra Competencies)
 - SLO 1: Students will use correct mathematical notation and terminology and will read and appropriately interpret various representations of information.
 - SLO 2: Students will verbalize the steps needed to solve a problem.
 - SLO 3: Students will use various course technologies to connect with each other and the instructor, and to access course materials.
- Course Goal #2: Solve various kinds of equations Addresses UNM core area 2/HED Area II: Mathematics (Algebra Competencies) Competency 2
 - SLO 1: Students will solve linear equations and systems of two and three linear equations.
 - SLO 2: Students will solve polynomial equations including quadratics (polynomials of degree 2) and factorable polynomials of higher degree.
 - SLO 3: Students will solve rational equations by identifying the least common multiple needed to simplify the equation, and by identifying extraneous solutions to the original equation.

- SLO 4: Students will solve radical equations using inverse properties of exponents.
- SLO 5: Students will solve exponential and logarithmic equations using the properties of exponents and logarithms.
- SLO 6: Students will identify the standard and general form for the equation of a circle, will convert between the two forms using completing the square, and will identify the center and radius for the circle.
- Course Goal #3: Working with functions Addresses UNM core area 2/HED Area II: Mathematics (Algebra Competencies) Competency 3
 - SLO 1: Students will identify the domain and range for a given function and find the function value given a domain value as well as find the domain value given a specific function value.
 - SLO 2: Students will add, subtract, multiply and divide given functions, will create a composite function given two or more functions, and will show the decomposition of a given function into its basic parts.
 - SLO 3: Students will identify and categorize functions according to the general properties of families of functions. For example, Students will recognize whether a given function is from the polynomial, rational, radical, exponential or logarithmic function family.
- Course Goal #4: Working with graphs Addresses UNM core area 2/HED Area II: Mathematics (Algebra Competencies) Competency 1
 - SLO 1: Students will determine if a given graph represents a function.
 - SLO 2: Students will graph a circle given either form of the equation of a circle (standard or general).
 - SLO 3: Students will graph a given function by identifying the following features for the function • The domain and range • The x- and y-intercepts, if they exist • End behavior • Asymptotes if they exist • Intervals where the function is increasing or decreasing • Local maxima and minima
 - SLO 4: Students will determine the properties and behavior of a function given only the function's graph. In particular, the domain and range, intercepts, end behavior, asymptotes and specific values of the function.
- Course Goal #5: Modeling and solving applied problems Addresses UNM core area 2/HED Area II: Mathematics (Algebra Competencies) Competency 4
 - SLO 1: Students will identify slope as a rate of change within the context of a given word problem, and will express in their own words what the slope represents for that specific situation.
 - SLO 2: Students will construct appropriate equations to model a situation presented to them through a word problem. They will extract information from a word problem in such a way that allows them to identify the general behavior of the data through graphing.
 - SLO 3: Students will find maximum or minimum values for word problems which are modeled by quadratic functions.

- Ultimate SLO: Students will identify the family of functions that is illustrated within an applied problem, either by representing the situation with a graph or using their understanding of how certain phenomena behave to describe the function. For example, constant rate of change is a property of linear functions, free-falling objects are modeled by quadratic functions, and compound interest grows exponentially.

The required text for this course is:

- Beecher, Penna, Johnson, Bitinger, *College Algebra with Intermediate Algebra: A Blended Course* (Pearson, 2017).

At the end of this syllabus will be a schedule of topics you will cover in class.

3 Course Structure

In this class, I'm going to ask you to read. Every week, I will send out reading questions for you to answer through Blackboard Learn.

1. Reading Questions: These reading questions will be used to see how much you've read. I may ask you to tell me anything you've found particularly interesting or tell me which definitions or examples you've had trouble understanding. I may invite you to ask me any questions you have about the reading.
2. Weekly Assignments: In addition to the reading questions, I will be assigning exercises to prepare you for the exams.
3. Scientific Calculator: Though a calculator was nice to have for Math 120, it is a must in Math 121, especially when we work on the exponential and logarithmic functions. You will be allowed to use a scientific calculator on the midterm and final exams so it is a good idea to use one during the entire semester.
4. There will be a midterm and a final exam. On each, you may use a graphing calculator and a $3'' \times 5''$ notecard. You must score a 70% or higher on the final to get credit for the class.

4 Grading Policy

Your grades will be based on a combination of your high school work and the work I give you. The reading questions are for me to see that you are trying to read and learn and the weekly assignments are for me to see how much you've learned and prepare you for the exams. I will also give out a midterm and final exam. Before you take these I will give your teacher review exams to help you study. I will also make arrangements with your teacher to go to you class periodically to answer questions and help with the reviews. Your grade will be calculated as follows.

Requirement	% of Grade
1. Reading Questions	15%
3. Weekly Assignments	15%
4. Midterm	10%
5. High School Work	30%
6. Final Exam	30%

You must receive at least 70% on the final exam to get credit for the class.

5 Make-up Policy

I will allow up to four late submissions of the weekly assignments. Because of the nature of the reading questions and discussions, I will not allow make-ups for these assignments.

6 A note on academic integrity

We will follow university policy and on 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.

7 Students with Disabilities

If you have a documented disability, please provide me with a copy of your letter from Equal Access Services as soon as possible to ensure that accommodations are provided in a timely manner.

8 EQUAL OPPORTUNITY AND NON-DISCRIMINATION:

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 page 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>.

9 Schedule

Week number	Sections Covered
1	R.4,R.5,R.6
2	1.1-1.5
3	2.6,2.7,3.1-3.4
4	4.3-4.8
5	7.1-7.5
6	2.1-2.4,6.8
7	5.1-5.4 (Review from 120) Distance Formula, 11.2 (only circles)
8	Midterm Review and Midterm
9	Spring Break
10	9.1-9.3
11	9.4,9.5
12	9.6,9.7
13	5.3-5.5
14	6.1-6.3 (Review from 120) 6.4-6.7
15	8.1-8.6
16	Review for Final
17	Final Exam

Note: This syllabus is subject to change, if needed.