MATH 121: COLLEGE ALGEBRA

University of New Mexico, Summer 2019

8 Week Syllabus

Instructor: Kevin Burns **Office: SMLC 228**

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Prerequisite: MATH 103 or placement test

Textbook: COLLEGE ALGEBRA, Sullivan (*NM Custom Edition* -10th)

Calculator: Scientific calculator may be necessary. **No calculators** will be allowed on any of the exams (including the final).

Homework: Your daily homework is your most important effort in this course. It is imperative that you do all of the suggested problems listed below, especially the hard ones, because this is how you actually learn the material. Expect 2-3 hours of homework for every hour of class meeting time (on average **10-15 hours per week**).

Collected Homework: It is necessary that you distinguish between suggested homework and collected homework. Assignments to be collected and their due dates can be found on UNM Learn. Late homework is accepted but subject to penalty. No homework will be accepted if more than two days late.

Exams: There will be three in-class exams, 100 points each. No notes or calculators will be allowed on any exam, including the final. You have to show all your work and use proper mathematical notation to receive full credit. A correct answer without work will receive 0 points. If you **must** miss an exam, you **must** contact your instructor **on** or **before** the day of the exam in order to discuss a make-up test. Make-up tests will be given solely at your instructor's discretion. If you miss an exam and do not contact your instructor immediately, you may be dropped from the course.

Final Exam: The final exam, worth 150 points, will be on Monday July 29 during normal class time. No early final exams will be permitted except in documented emergencies: flight reservations, weddings, vacations, birthdays, non-NCAA sporting events etc. are not considered emergencies.

Grading: To get full credit on graded work students must address all mathematical components presented by the problem, showing all steps and calculations. The use of proper notation, well structured procedures, and legibility will be taken into account when assigning points. Your grade will be determined based on your performance on the following:

Quizzes/Assignments	150 points
Three Exams (100 points each)	300 points
Final Exam	150 points
Total	**600 points**

How Grades Are Determined: A: 90-100%, B: 80-89%, C: 73-79%, C-: 70-72%, D: 60-69%, F: < 60%

Attendance: Attendance is mandatory. If a student has four or more unexcused absences he/she may be dropped from the course. Tardiness or early departure may be regarded as an absence. After the withdrawal deadline the instructor will not drop any student. Please note that it is the student's responsibility to drop the course if he/she stops attending. A failing grade of F may be assigned if the student stops attending and does not drop before the posted deadline.

Student Behavior: All students have to abide by the Student Code of Conduct: pathfinder.unm.edu. According to the Code of Conduct, 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 toward the instructor and their fellow students. The use of cell phones, headphones, smart watches, etc. is not permitted during class or exams.

Cheating: Cheating of any kind will not be tolerated. Examples are: looking at a neighbor's exam, plagiarizing, using a calculator when not permitted, using the book and/or a cheat sheet, modifying an exam after it is graded, etc. The instructor may warn an offending student, the score of the exam may be reduced, the score may be set to zero, the student may get dropped from the class, the student may get a grade of F for the class, and in most cases the incident will be reported to the Dean of Students.

Registration, Drop, and Grade Change Deadlines: The Department of Mathematics and Statistics will adhere to all of the registration deadlines published by the Office of the Registrar in the schedule of classes: www.registrar.unm.edu.

June 7	Last day to add a course or change sections
June 7	Last day to change grading option (via LoboWeb)
June 14	Last day to drop without a grade (100% Refund)
July 12	Last day to withdraw without the Dean's permission
July 26	Last day to withdraw with the Dean's permission

Accessibility 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.

Title IX Reporting Obligations: Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence.

Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus, especially the LoboRESPECT Advocacy Center and the support services listed on its website (http://loborespect.unm.edu/).

Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" by the Department of Education, any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct, please see: https://policy.unm.edu/university-policies/2000/2740.html.

Extra Help: In addition to your instructor's office hours, there is extra help available at:

- *CAPS*: Center for Academic Program Support. Located on the 3rd floor of Zimmerman Library, 277-4560
- *CATS*: Counseling and Therapy Services, Student Health Center, 277-4537. (For test anxiety, etc.)

Student Learning Outcomes: By the end of the course, students will be able to

A. Understand the concept of a function

1. Apply the definition of a function
2. Identify domain and range. Interpret in context when appropriate.
3. Use function notation to evaluate functions.

B. Build New Functions from Existing Functions

1. Use graphing transformations
2. Use function arithmetic
3. Find inverse functions

C. Build and Analyze Graphs

1. Understand the relationship between a function's equation, table and graph.
2. Identify or sketch the following key features of a graph: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; slope; vertex; and end behavior.
3. Create graphs using key features.
4. Write the equation of a function or circle given its graph based on the key features shown. (reverse of above outcome)

5.Interpret key features of functions in context.

D. Apply Algebraic Techniques

1. Evaluate numeric expressions in exact form and find decimal approximations for irrational numbers.
2. Solve equations and inequalities
3. Simplify algebraic expressions to analyze functions and graphs.

Note: The instructor reserves the right to change the syllabus at any point of time during the semester.

Tentative Schedule

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1 June3-June7	3.1 (Functions)	3.1 (Functions)	3.2 (Graphs of Functions)	3.3 (Properties of Functions)	3.4 (Library of Functions)
2 June10-June14	3.4 (Piecewise)	3.5 (Transformations)	3.5 (Transformations)	Review	Exam 1
3 June17-Jun21	4.1 (Linear)	4.3 (Quadratic)	4.3 (Quadratic)	4.4 (Quadratic Apps)	5.1 (Polynomials)
4 June24-June28	5.2 (Rational)	5.3 (Graphs of Rationals)	1.6 (Abs Value Equations and Inequalities)	4.5 (Quadratic Inequalities)	5.4 (Polynomial and Rational Inequalities)
5 July1-July5	Review	Exam 2	6.1 (Composition)	Holiday	Holiday
6 July8-July12	6.2 (Inverses)	6.2 (Inverses)	6.3 (Exponential)	6.4 (Log Functions)	6.4 (Log Functions)
7 July15-July19	6.5 (Properties of Log)	6.6 (Log and Exponential Equations)	6.6 (Log and Exponential Equations)	Review	Exam 3
8 July22-July26	6.7 (Financial Models)	6.8 (Exponential Growth and Decay)	2.1(Midpoint) 2.4 (Circles)	8.1 (Systems of Linear)	Review
9 July29	Final Exam				

Suggested Homework:

Section	Suggested Problems
3.1:Functions	1-4 all,19,21,23,25,31,33,35,37,43,45,49,51,53,55,59, 63,67,77,81,83,85,87,89,93,97,99,101,115
3.2: Graphs of Functions	1,2,4,5,7,11,13-23 odd,25,27,29,31,39,41,43,47
3.3: Properties of Functions	1,5,13-23 odd, 25-31 odd, 33,37,39,45,47,49,65,71,73,81,83,105
3.4: Library of Functions/Piecewise Functions	1,3,4,9,11-18 odd,19-25 odd,27,29,31,35,37,43,49,51
3.5: Graphing Techniques/Transformations	1,2,5,7-18 all,19-25 odd,27,29,39,43,51,55,57,63,75
4.1: Linear Functions	1,2,3,4,5,13,15,29,31,33,37,47,49,53,59,60
4.3: Quadratic Functions	1,2,4,7,11,13-20 all,23,25,33,35,37,39,41,43,49,51,55,57,63,69, 81,85,101,102,104
4.4: Quadratic Applications	1,3,5,7,9,11,19,35
5.1: Polynomial Functions	1,2,3,6,8,12,13,15,17,19,21,23,25,27,43,49,51,57,59,63,67,69,73,81,83, 85,107,134,135,136,137
5.2: Properties of Rational Functions	3,6,7,9,10,15,17,19,21,25,27,29,31,33,35,37,39,45,47,49,51,58,67,68,70
5.3: Graphs of Rational Functions	1,4,5,6,7,9,11,15,17,19,25,33,37,39,49,51,57ab
1.6: Equations/Inequalities Involving Absolute Value	1,2,3,5,7,9,11,19,21,23,31,33,37,41,43,45,47, 49,65, 69
4.5: Quadratic Inequalities	1,2,3,5,7,9,11,13,15,17,23,33,35,44,45,46
5.4: Polynomial and Rational Inequalities	1,2,5,7,15,19,21,25,33,35,39,51,67,69,82
6.1: Composition of Functions	1,2,3,5,6,7,8,9,11,13,15,17,21,25,27,29,31,33,35,37,43,47,49,51,53,59, 69,74,77
6.2: Inverse Functions	1-4 all,7,8,9,11,12,13,15,17,21,23,27,29,31,35,39,43,45, 53,57,61,65,67,69,71,77,79,107,108,109,110
6.3: Exponential Functions	1-5 all,7,11,13,14,29,35-42 all,43,45,51,55,59,65,69,75,79,81,87,89,95, 109,111,136-139 all

6.4: Logarithmic Functions	1,2,3,11,17,19,25,27,29,39,43,45,47,65-72 all,73,79,83,85,89,91,93,95,99,101,103,111,112,113,114,125,140
6.5: Properties of Logarithms	1-7,11,12,13,15,17,19,21,23,25,29,37,39,41,43,45,47,49,51,57, 61,63,65,71,79,85
6.6: Logarithmic and Exponential Equations	1,2,5,7,9,13,17,19,21,26,33,41,43,49,57,61,103,105,107,109,112,113
6.7: Financial Models	1,2,3,5,7,11,13,15,27,31,35,39,41,77,79
6.8: Exponential Growth/Decay	1,3,5,7,9,11,13,21,30,31,32,33
2.1: Distance and Midpoint Formulas	2,3,4,14,15,19,21,23,27,31,37,39,41,45,53,63
2.4: Circles	1,2,6,7,9,11,13,15,17,21,23,25,27,29,35,37,41
8.1: Systems of Equations	1,2,3,5,7,9,11,17,19,21,23,27,31,35,37,39,57,59,61,91