

MATH 5003

Algebraic Patterns and Functions

(RM-MSMSP)

Instructors: Gayle Bush, Juli Nieto, Bruce MacMillan

Course Meetings: Class will be held Monday through Friday, June 19th-June 23rd, June 26th-June 30th, from 8:30 to 4:00. The typical daily schedule that we will try to follow will be:

8:30 - 10:00	Session 1
10:00 - 10:15	Break
10:15 - 11:45	Session 2
11:45 - 12:45	Lunch
12:45 - 2:15	Session 3
2:15 - 2:30	Break
2:30 - 4:00	Assignment/Problem Session

Course Objectives and Philosophy: The main objective of this course is to strengthen the participant's knowledge of mathematics, particularly the mathematics related to algebra and functions. In the report by the Conference Board of the Mathematical Sciences, titled The Mathematical Education of Teachers, Part I, it recommends (page 30) that teachers of mathematics in the middle grades should:

1. Understand and be able to work with algebra as a symbolic language, as a problem solving tool, as generalized arithmetic, as generalized quantitative reasoning, as a study of functions and relations, and as a way of modeling physical situations.
2. Develop an understanding of variables and functions, especially of different equivalent relationships between variables.
3. Understand linearity and how linear functions can illustrate proportional relationships.
4. Recognize change patterns associated with linear, quadratic, and exponential functions.
5. Demonstrate algebraic skills and be able to give rationale for common algebraic processes.

It needs to be clearly understood by every participant in this class, that the *primary emphasis* of this course is to improve mathematical understanding. We realize that sound pedagogy and implementation of mathematical concepts is very important to mathematics teachers of all levels, and we hope that we use these approaches as a model for our teaching; however, applying the mathematical content to the participant's middle school class is not the primary objective.

Grading Policy:

Daily Assignments: A total of eight "assignments" will be given and collected during the two week session. These assignments will be graded and will be worth 25 points each. You will be given class time (2:30-4:00) each day to complete these assignments, however, some additional outside time may be needed to complete all of the problems. Assignments are due before class begins each day. We (the instructors) will also be available to answer last minute questions on the assignments before class begins (8:00-8:30) each day. You are able to work together in doing homework assignments, however, copying someone's assignment will not be tolerated. If this occurs, all participants involved will receive no credit on the assignment.

Mathematics Implementation Project: One group project will be assigned during the course that will be an extension of or to the daily assignments. This project will emphasize how the content (a certain topic) of this course could be implemented within the mathematics instruction at the Middle School level. This project will count 50 points.

Attendance/Class Participation: In a course such as this, which has no tests or quizzes, and which will contain many in-class problems, data collection activities, and discussions regarding pedagogy and implementation, attendance and participation by everyone is essential. We understand that circumstances may arise that would cause you to miss a short amount of time during the ten day class. Missing one-half of day is acceptable, but the work missed will have to be made up. Missing more than one-half of a day, such as one full day, will result in not only having to make up the work missed, but your grade being lowered one letter grade. (For example, a grade of an A- will become a B-, etc.) In addition, more than one day missed will cause forfeiture of the \$1500 stipend and forfeiture of the four hours of credit from UCD. It is also important that everyone arrives on time, since class will begin promptly at 8:30 in the morning, and at 12:45 after lunch. Excessive tardies could also result in your grade being lowered.

Points Summary:

Homework Assignments:	200 points	(8 times 25)
Implementation Project:	50 points	

Total:	250 points	

Your final grade will be determined by the percentage of these points you have actually received.

A: 90% - 100%, B: 80% - 89%, C: 70% - 79%, D: 60% - 69%, F: Below 60%

Note: The bottom 2 percentage points of each letter grade will be assigned a "minus", and the top 2 percentage points will be assigned a "plus".

Final Comment: Please turn off all pagers and cell phones at the beginning of class!