

1. Department of Curriculum and Instruction  
Dr. Robert Thomas  
EME 872  
Course Title: Mathematics in the Curriculum  
Credit Hours: 3  
Wallace 427

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2. Course Description: Exploration of trends, concepts, and issues involved in modern mathematics programs. Research findings will be examined and multi-sensory materials are presented.
3. Text: No text required.
4. Course Objectives

The student will

1. Know major research findings and their implications for a contemporary mathematics program.
2. Have knowledge of authorities in the field and their contributions to mathematics instruction in the elementary and/or middle schools.
3. Be able to diagnose and identify major problems of teaching mathematics in the elementary and/or middle school.
4. Gain greater understanding of and insight into the structure of the Hindu-Arabic number system.
5. Develop greater competency in using and evaluating newer instructional methods and materials for modern Elementary and/or Middle School mathematics programs.
6. Update his/her understandings and skills necessary to evaluate the outcomes of a modern elementary and/or middle school mathematics program.
7. Develop awareness and an understanding of the trends and issues confronting the educator in the development of a modern mathematics curriculum for the elementary and/or middle school.

5. Evaluation Methods

1. Written assignments
2. Classroom participation/Projects/Other
3. Classroom presentation
4. Electronic Discussions
5. Examinations

**GRADING PROCEDURES:**

Midterm Exam	100 points
Projects/Quizzes/Papers	100 points
Presentation	100 points
Presentation Reflection	50 points
Discussion Board	50 points
Comprehensive Final Exam	200 points

There will be 600 points possible.

(Points will be converted to % scores and grades will be assigned as per the scale below)

**GRADING SCALE:**

**Mid-term grade:** The midterm grade will be the average of the midterm exam and any other collected assignments up to that date.

**Course grade:**

Points:	540 or more	480 - 539	420 - 479	360 - 419
Grade:	A	B	C	D

**TESTS:** The midterm exam and Final Exam will cover topics from readings, presentations and other assignments. If you are absent from class on the day of a test or quiz, and you do not make arrangements to make it up prior to the next class meeting, you will take a zero on that test. Usual make-up time will be before

6. Student Progress

7. Attendance Policy

Absences equating 20% of class meetings will result in automatic failure.  
Class sessions missed as a result of late entry will be counted as absences.

The student is responsible for presenting adequate reason for absence to the instructor in order to be given the opportunity to make up missed work. (Adequate reasons include personal illness, death or serious illness in the immediate family, or participation in an approved university activity.)

8. The last day to withdraw from this class is Friday, March 23, 2007

## 9. Disability Statement

“If you are registered with the Office of Services for Individuals with Disabilities, please make an appointment with the course instructor to discuss any academic accommodations you need. If you need academic accommodations and are not registered with the Office of Services for Individuals with Disabilities, please contact the office on the third floor of the Student Services Building, by email at disabilities@eku.edu or by telephone at (859) 622-2933 V/TDD. Upon individual request, this syllabus can be made available in alternative forms.”

## 10. Academic Integrity

Professional Education Program Model:

***EKU Professional Education Model:  
Effective Educators as Effective People***



***EKU Professional Education Slogan:  
To teach, to learn, to help others teach and learn.***

## 11. Course Requirements

1. Selected readings from recent journals
2. Lectures and discussions
3. Selected technological resources
4. Preparation and use of instructional materials
5. Group reports and/or presentations from study committees
6. Use of resource personnel from philosophy, sociology and psychology
7. Demonstrations/Presentations with individuals and small groups of children
8. Independent work

## 12. Course Outline

Topical Outline

1. The foundations of a modern mathematics program

- a. Historical
  - b. Philosophical
  - c. Sociological
  - d. Psychological
2. The importance of Structure in Mathematics
- a. What is structure?
  - b. Decimal system of numeration
  - c. Order
  - d. Commutative, Associative and Distributive properties
  - e. Identify elements, closure
  - f. Pairs of numbers
3. The teacher as an intelligent guide in critical areas
- a. Inductive vs. deductive reasoning
  - b. Discovery and experimentation
  - c. Meaning and Significance
  - d. Ideas, understanding, concepts and generalizations
  - e. The scientific method
4. A developmental mathematics program
- a. The spiral concept
  - b. The sequence of topics
  - c. Grade placement of content
  - d. Horizontal expansion vs. vertical acceleration
5. Providing for individual differences
- a. Grouping within grade levels
  - b. Differentiation of assignments
    - (1) For students of different cultures and backgrounds
    - (2) For students on different learning levels
  - c. Individualized instruction
  - d. Multiple-track organizations
6. Developing the intangibles of mathematics
- a. Interest
  - b. Attitude
  - c. Creativity
  - d. Resourcefulness
7. Reading and language skills in mathematics
- a. Nature of reading and language skills
  - b. Source of difficulty and preventative techniques
  - c. Activities and devices
    - (1). Providing for slow readers

- (2). Providing for students whose language is different
8. Instructional Media for a modern elementary school mathematics program
    - a. Psychological considerations
    - b. Selection
    - c. Application
    - d. Evaluation
  9. The role of practice in a modern elementary school mathematics program
    - a. Psychological foundations
    - b. Individualizing practice materials
    - c. Enriching practice materials
    - d. Evaluating practice outcomes
  10. Evaluation in a modern elementary school mathematics program
    - a. Use and evaluation of existing standardized tests
    - b. Case study techniques
    - c. Teacher-made evaluation instruments
    - d. Diagnosis - the key to a successful evaluation program
  11. The area of problem solving
    - a. Psychological principles
    - b. Promising techniques
    - c. Evaluating the problem-solving program
  12. Contemporary trends and issues
    - a. Use of the computer
    - b. Educational television
    - c. Experimental programs
    - d. Instructional materials
  13. Technology in the Classroom
    - a. Computers
    - b. Calculators
    - c. CAI (Computer Assisted Instruction)
    - d. Other
  14. Standardized Testing
    - a. KATS
    - b. CTBS
    - c. Curricular Changes
  15. Role of Teachers as Curriculum Leaders
    - a. Programs
    - b. Leadership
    - c. Politics

16. Current Trends in Elementary Mathematics Education
  - a. What's new?
  - b. What's popular?
  - c. What does the research show?
  
17. Current Trends In Middle School Mathematics Education
  - a. What's new?
  - b. What's popular?
  - c. What does the research show?
  
18. Research
  - a. What does research say about best practices?
  
19. Instruction
  - a. What type of instruction is being used in Mathematics education?
  - b. Direct Instruction/Collaborative or Group Learning/Discovery Learning

13. This course will be web-enhanced.

You will be required to use Blackboard as a portion of this class. In order to do this, you must activate your student email account.

By the end of the first week you must have logged into Blackboard and

1. entered your username for receiving email
2. make your email address visible on the class roster.
3. Answer the discussion question.
4. Respond to each of the other student responses.

If you have not used Blackboard previously, please see the instructions sheet.

Students are expected to check their e-mail at least every other day.

When you use email, you **MUST** include your name in the body of the email. Some people have usernames that seem to have little connection with the person sending the email. If, during the semester, you change your username, you **MUST** also change it within Blackboard

The computer keeps track of student use of Blackboard; the instructor has access to how much use you made of this online component.

All notification of grades will be done via the returned work and via Blackboard.

Official E-mail: An official EKV e-mail is established for each registered student, faculty, and staff member. All university communications sent via e-mail will be sent to this EKV e-mail address.