

**MORAVIAN COLLEGE
BETHLEHEM, PENNSYLVANIA
EDUCATION 362Z
CURRICULUM AND INSTRUCTION IN MATHEMATICS
FALL 2006**

INSTRUCTOR: Catherine J. Meholic
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CLASS HOURS: Wednesday 6:30 – 9:30 PM

OBJECTIVES:

- To practice and develop teaching skills in mathematics in a non-threatening environment
- To develop skills in teaching secondary mathematics that will promote genuine student learning
- To develop classroom management skills
- To prepare for the field experience
- To plan and execute mathematics lessons effectively
- To construct lesson plans, unit plans, and assessments in mathematics
- To examine current methods of problem solving techniques
- To understand and apply NCTM and Pennsylvania State Standards to lesson plans

TEXTBOOK (required)

Teaching Secondary and Middle School Mathematics by: Daniel Brehier
2nd Edition Pearson, Allyn, and Bacon, 2000

OTHER READINGS

Mathematics Teacher
Mathematics Teaching in the Middle School
NCTM Curriculum and Evaluation Standards for School Mathematics
NCTM Assessment Standards for School Mathematics
Pennsylvania State Standards and Assessment Anchors
Other pertinent articles and books

COURSE REQUIREMENTS

- All written work outside of class must be typed. Formal papers must be double spaced and written in APA style.
- All assignments must be completed on time.
- Attendance at all class sessions. (If you have an emergency, notify the instructor as soon as possible.)

EVALUATION

- Academic dishonesty as described in the scholastic integrity policy of Moravian College will result in a grade of zero and the Academic Dean will be notified.
- Work is expected on the due date. Please notify teacher **prior to** the due date if an emergency arises.
- Evaluation is based on the following:

20%	Unit Plan
15%	Reflection of Unit Plan
15%	Three written tests based on classroom lecture, textbook and outside readings
15%	Portfolio & Mock Job Interview (in lieu of Final Exam)
10%	Field Journal
10%	Written answers to Discussion Questions
10%	In-class Presentations (i.e. lessons, unit plan overview)
5%	Class Participation

WEEKLY SCHEDULE OF TOPICS

(This part of the syllabus is subject to slight changes.)

August 30, 2006

INTRODUCTION/MATHEMATICS AS A PROCESS

- Attend Field Experience Seminar in Prosser Auditorium
- Get acquainted-information exchange
- Mathematical Autobiography-“Where have I been, where am I, why am I studying math education and what do I hope to achieve”
- Course Outline/Assignments/Grading & Attendance Policy
- Examine Textbook Lay-Out
- Mathematics Reform
- Doing Math: Problem Solving/Reasoning/Communications/Connections/Representation
- NCTM membership and journals
- Assignment: Read Text pages 1 – 26
Complete Discussion Questions page 26 # 2,6, 7

September 6, 2006

LEARNING THEORIES AND PSYCHOLOGY IN MATHEMATICS EDUCATION

- Current Research in Mathematics Education
- Brunner’s Stages of Representation
- Van Hiele Model
- Traditional vs. Constructivist Classroom
- Gardner’s Seven Styles of Learning
- Assignment: -Read Text pages 29 – 58
-Discussion Questions page 58 #2, 3 (Site the text you examined and give examples from the text), 4
-Create a Style of Learning activity for 1) Standard Equation of a Circle, 2) Linear Functions and 3) Mean, Median, Mode

September 13, 2006

CURRICULAR MODELS

- Essential Math Knowledge-Understanding by Design
- Traditional vs. Integrated Sequences
- The Core Curriculum
- Compare/Contrast Textbooks
- Examine NCTM Standards, PA mathematics Standards, Anchor Assessments, Eligible Content
- Assignment: Read Text pages 63 – 84
Discussion Questions #3, 6

September 20, 2006

IMPLEMENTING A COURSE OF STUDY

- Writing Goals and Objectives
- Selection and Organization of Resources
- Reflecting on a Lesson
- Assignment: Read Textbook pages 88 – 115
Discussion questions # 5, 8, 10
Test on Chapters 1 – 4 next week

Monday, September 25, 2006 is the start of your field experience.

September 27, 2006

PLANNING FOR INSTRUCTION

- Test on Chapters 1 – 4
- Lesson Planning vs. Unit Planning
- Assignment: Read Textbook pages 123 – 153
Discussion Questions 1, 8

October 4, 2006

TEACHING TOOLS AND STRATEGIES

- Presentation of Individual Lessons
- Teaching Standards and Guiding Principles
- Selecting Activities and Problems
- Questioning Strategies
- Learning Environment
- Assignment: Read Textbook pages 156 – 190
Discussion Questions 5, 7, 8
Individual Lesson Plan on assigned topic to be presented next week

October 11, 2006

TEACHING SPECIFIC MATH CONTENT/INTEGRATING TECHNOLOGY

- Use of Manipulatives
- Graphing Calculators
- Computer Technology and Software
- Internet and WWW
- Assignment: Read Textbook pages 194 – 237
Discussion Question 7
Test on Chapters 5 – 7 next week

October 18, 2006

PERSPECTIVES OF A NEW TEACHER

- Test on Chapters 5 – 7
- Guest Speaker
- Introduction to your portfolio
- Lesson Presentation
- Assignment: Read Appendix B pages 362 – 381
Lesson Reflection

October 25, 2006

THE ROLE OF ASSESSMENT/QUESTIONING TECHNIQUES

- What is assessment
- Test Construction
- Scoring Student Work
- Open-Ended Questions and Rubrics
- Interviews
- Portfolios
- The art of questioning
- Assignment: Read Textbook pages 243 – 274
Discussion Questions 1, 3(Include Copy), 4

November 1, 2006

PRINCIPALS OF ASSESSMENT PRACTICES

- NCTM Recommendations on Assessment
- Equity and Assessment
- Homework Assignments
- Evaluation: Determining Final Grades
- Assignment: Read Textbook pages 278 – 302
Discussion Questions 3, 5, 7

November 8, 2006

MEETING NEEDS OF ALL STUDENTS

- Defining and Achieving Equity
- General suggestions for Meeting Diverse Student Needs
- Students with Special Needs
- Gender
- Ethnic and Cultural Issues
- Differentiated Instruction
- Mainstreaming and Inclusion
- The Co-Teaching Model
- Assignment: Read Textbook pages 307 – 329
Discussion Questions 1, 4

November 15, 2006

THE TEACHER OF MATHEMATICS IN THE SCHOOL COMMUNITY

- Working with Parents
- Supervision and Evaluation of Teachers
- Functioning in a Department
- Ongoing Professional Development
- Assignments: Read Textbook pages 333 – 355
Discussion Questions 1, 5 (Attach Copy)
Unit Plan Due next week & Presentation to Class on Nov. 29

November 20, 2006: Unit Plan is delivered to me in Education Office between 3:30 and 5:00

November 29, 2006

READING AND WRITING ACROSS THE CURRICULUM

- Presentation of Unit Plans
- Importance of reading and writing in Mathematics
- Techniques for incorporating reading and writing in mathematics
- Assignment: Test Chapters 8 – 11

December 4, 2006: Unit Plan Reflective Critique due to me in Ed Office between 3:30 and 5:00

December 6, 2006

WRAP-UP AND FINAL PREPARATIONS

- Test # 3 Chapters 8 - 11
- Discussion of other Initiatives and Topics not discussed
- Fill out course evaluations
- Assignment: Put finishing touches on Portfolio

December 8, 2006: Field Experience ends

December 13, 2006

- Bring completed Portfolio for Formal Interview (Dress appropriately for an interview.)