

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

**INSTRUCTOR:** Catherine J. Meholic  
610-366-1443  
[cmeholic@stsd.org](mailto:cmeholic@stsd.org)

**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  
2<sup>nd</sup> 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.)