

MORAVIAN COLLEGE
BETHLEHEM, PENNSYLVANIA
EDUCATION 362Z
CURRICULUM AND INSTRUCTION IN MATHEMATICS
FALL 2007

INSTRUCTOR: Catherine J. Meholic
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CLASS HOURS: Wednesday 6:30 – 9:30 PM in room PHACC 235

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 best practices in mathematics
- 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
15%	In-class Presentations (i.e. lessons, unit plan overview)

WEEKLY SCHEDULE OF TOPICS

(This part of the syllabus is subject to slight changes. Additional assignments/readings are posted on Blackboard.)

August 29, 2007

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
Enroll in Blackboard

September 5, 2007

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 12, 2007

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 19, 2007

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 24, 2007 is the start of your field experience.

September 26, 2007

PLANNING FOR INSTRUCTION

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

October 3, 2007

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 10, 2007

TEACHING SPECIFIC MATH CONTENT/INTEGRATING TECHNOLOGY

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

October 17, 2007

PERSPECTIVES OF A NEW TEACHER

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

October 24, 2007

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
Lesson for Presentation

October 31, 2007

PRINCIPALS OF ASSESSMENT PRACTICES

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

November 7, 2007

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
Lesson Plan for Presentation

November 8 or 9, 2007: PCTM Conference in Valley Forge

November 14, 2007

THE TEACHER OF MATHEMATICS IN THE SCHOOL COMMUNITY

- Working with Parents
- Supervision and Evaluation of Teachers
- Functioning in a Department
- Ongoing Professional Development
- Lesson Presentation
- Assignments: Read Textbook pages 333 – 355
Discussion Questions 1, 5 (Attach Copy)
Lesson Reflection
Unit Plan Due next week & Presentation to Class on Nov. 28

November 19, 2007: Unit Plan is delivered to me in Education Office between 3:30 and 5:00

November 28, 2007

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 3, 2007: Unit Plan Reflective Critique due to me in Ed Office between 3:30 and 5:00

December 4, 2007

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 7, 2007: Field Experience ends

December 12, 2007: Bring completed Portfolio for Formal Interview (Dress appropriately)