MTH463-1 Fall 2012

Time and Place: MW 3:00 – 4:15 RS 13
Instructor: Lynda Wynn
Email: lyndawynn@pointloma.edu
Phone Number: 619–849–2219
Office Number: S210
Office Hours: Immediately following class sessions

Texts:

Teaching Secondary and Middle School Mathematics. Third Edition. Brahier. Allyn and Bacon.

Mathematics Framework for California Public Schools: Kindergarten through Grade Twelve

Supplemental Texts:

The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom by James W. Stigler, James Hiebert

The Mathematical Education of Teachers, CBMS Issues in Mathematics Education, Volume 11, AMS and MAA publication

Motivation Counts by David R. Johnson

Every Minute Counts: Making Your Math Class Work by David R. Johnson

Making Minutes Count Even More by David R. Johnson

Content: This is a mathematics course designed to give mathematics majors intent on teaching secondary school mathematics an overview of the procedures, content, and issues involved in helping today's adolescents learn the mathematics necessary to meet standard requirements as well as to be prepared for the work force or college.

Objectives: The objectives of this course are to help you (a) become familiar with the secondary school mathematics curriculum; (b) become aware of pedagogical techniques and theories; and (c) develop the skills needed to accomplish the goals that we set for our students.

Student Evaluation:

The following are the minimum components (expect others to be added, like additional readings or response papers)

Attendance and participation: One of the purposes of this course is develop a community that is concerned about the teaching and learning of mathematics. Each member of the class is essential to the development of a learning community and, as such, regular attendance and participation, in and out of class, is expected of all students.

Response and Reaction Paper: You will present chapters from The Teaching Gap and write a 3-5 page paper giving your responses and reactions to the content of the book.

Oral Response and Summary: Read selections from Johnson's books and summarize in an oral report and handout.

Lesson Plans (3):

Design a lesson applying use of technology (graphing calculator, spreadsheet, etc.) in teaching a specific topic

Design a lesson utilizing "homemade" or commercial mathematics manipulatives

Design a lesson that leans heavily on the history of mathematics or that exposes students to mathematics of/within a foreign culture

Internet Bibliography: Develop an annotated internet bibliography of five (5) web sites in mathematics education, including a key feature of each site that helped earn the site a spot on your "top 5" list.

Journal Article Review: Choose two articles in either Mathematics Teacher or Mathematics in the Middle School examining a method(s) for teaching and write a review for each (two pages). For each article review, include:

why this article interested you;
whether the article met, exceeded, or missed your expectations and why;
the content and/or instructional strategy upon which the article was focused;
the explicit parameters you used to evaluate the potential value for the classroom teacher.

Overview and Design of a Unit: This assignment requires you to create an instructional unit that would be appropriate for middle school students. The guidelines are:

Unit Objectives: Write the curriculum objectives for the unit and give the period of time that you think will be necessary to accomplish them.

Major Mathematics Concepts: Furnish a list of the unit's major concepts and/or vocabulary and tell whether you think this will represent new material, review material, or an opportunity to extend their understanding of this material for these students.

Instructional Activities: Provide a list of at least five of the instructional activities you intend to use. Specify how these activities are intended to address basic skills, conceptual understanding, and problem solving within the topic you are teaching.

Assessment: Outline the kinds of assessment that will be used in the unit and provide a sample of two.

Lesson Plans: Write a set of three consecutive lesson plans that would be descriptive, representative, and which you believe would be appropriate for this unit.

Choose from one of the following topics to address in the unit:
Number and operations (Integers, rational, and real)
Measurement (Imperial/Metric, Operations, Perimeter, Area, Volume)
Geometry (Properties of shapes and proofs)
Probability (Games, Combinatorics)
Data Analysis (Data collection, Presentation and Analysis)
Algebraic concepts, equations, inequalities, and functions
Trigonometry and calculus

The design of a unit should be based on the principle that "the whole is more than the sum of its parts." That is to say a unit plan is more than a collection of lesson plans. Please **work in pairs** for this assignment.

Formative assessment for the course will be imbedded in the instruction and on going. Work may be returned for revision. Summative grade (course grade) will be determined by your overall performance in class and by the quality of work turned in.

Grading: No exams are given in this course. Your grade will be determined by quality of the following: attendance and participation, lesson plans, internet bibliography, journal article reviews, unit design, and any other assigned reading, papers, presentations, etc.

Attendance: Attendance is expected at each class section. In the event of an absence you are responsible for the material covered in class and the assignments given that day. See the Point Loma Nazarene University Catalog for a statement of college policy with respect to attendance. Remember that missing more than 10% (3 classes) can result in a failing grade, and missing 20% will surely result in de-enrollment. I will pass a sign in sheet around during each class session, and you are expected to sign in each day. If you do miss a class, be sure to get notes, homework assignment, and the next-class assignment as soon as you can from a classmate or from the instructor. In the case of an absence, always assume that you missed something important.

Academic Accommodations: While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic accommodations. At Point Loma Nazarene University, these students are requested to file documentation during the first two weeks of the semester with the Academic Support Center (ASC), located in the Bond Academic Center. This policy assists the University in its commitment to full compliance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. Once the student files documentation, the ASC will contact the student's instructors and provide written recommendations for reasonable and appropriate accommodations to meet the individual learning needs of the student.

Final: There is a final, culminating experience for this course and will take place on **MONDAY, December 10, 1:00 – 3:00 p.m.**