

**PTED 7281                      LF09 Teaching and Learning Mathematics for the 21<sup>st</sup> Century- P-5**

Semester Hours            3

Semester/Year:            Summer 2009

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Online Support:

WebCT Login and Help page: <http://nibbler.westga.edu/webct/public/home.pl>

Distance Learning Library Resources: <http://www.westga.edu/~library/depts/offcampus/>

Ingram Library Information: <http://www.westga.edu/~library/info/library/shtml>

UWG Distance Education: <http://www.westga.edu/~distance/>

## **COURSE DESCRIPTION**

This course is designed to engage P-5 teachers of mathematics in investigations of their instruction in mathematics for the purpose of professional growth and teacher renewal. Through participation in the Learning Festival and an action research training module, P-5 teacher will gain knowledge regarding best practices in the teaching and learning of mathematics as well as strategies for researching teaching practices. With this knowledge, students will design an action research project that investigates some aspect of their mathematics instruction.

## **CONCEPTUAL FRAMEWORK**

The conceptual framework of the College of Education at UWG forms the basis on which programs, courses, experiences, and outcomes are created. By incorporating the theme “Developing Educators for School Improvement,” the College assumes responsibility for preparing educators who can positively influence school improvement through altering classrooms, schools, and school systems (transformational systemic change). Ten descriptors (decision makers, leaders, lifelong learners, adaptive, collaborative, culturally sensitive, empathetic, knowledgeable, proactive, and reflective) are integral components of the conceptual framework and provide the basis for developing educators who are prepared to improve schools through strategic change. National principles (NBPTS 1, 2, 3, 4 & 5), propositions (NBPTS), and standards (Learned Societies) also are incorporated as criteria against which candidates are measured.

The mission of the College of Education is to develop educators who are prepared to function effectively in diverse educational settings with competencies that are instrumental to planning, implementing, assessing, and re-evaluating existing or proposed practices. This course's objectives are related directly to the conceptual framework and appropriate descriptors, principles or propositions, and Learned Society standards are identified for each objective. Class activities and assessments that align with course objectives, course content, and the conceptual framework are identified in a separate section of the course syllabus.

## **COURSE OBJECTIVES**

The students will:

1. address the relationships between children and mathematics (National Council of Teachers of Mathematics, 2000; Stein, et. al., 2000; Moon & Schulman, 1995);  
*(Decision Makers, Lifelong Learners, Adaptive, Empathetic, Knowledgeable, Reflective; NBPTS 1, 2, 3, 4, 5; NCTM 2.5, 2.9)*
2. recognize the importance of the qualitative dimensions of children's learning (National Council of Teachers of Mathematics, 2000; Stein, et. al., 2000; Moon & Schulman, 1995);  
*(Lifelong Learners, Adaptive, Empathetic, Knowledgeable, Reflective; NBPTS 1, 2, 3, 4, 5; NCTM 2.5, 2.9)*
3. build beliefs about what mathematics is, about what it means to know and do mathematics, and about children's view of themselves as mathematics learners (National Council of Teachers of Mathematics, 2000; Stein, et. al., 2000; Moon & Schulman, 1995);  
*(Lifelong Learners, Adaptive, Empathetic, Knowledgeable, Reflective; NBPTS 1, 2, 3, 4, 5; NCTM 2.5, 2.9)*
4. gain an understanding of the Standards 2000 (NCTM, 1998) and apply recommended strategies in the classroom (NCTM, 1990; Stein, et. al., 2000; Moon & Schulman, 1995);  
*(Lifelong Learners, Adaptive, Empathetic, Knowledgeable, Reflective; NBPTS 1, 2, 3, 4, 5; NCTM 2.3, 2.8)*
5. gain an understanding of the constructivist theory of math instruction (NCTM, 1998, 1990, 2000; Stein, et. al., 2000; Moon & Schulman, 1995); and  
*(Adaptive, Empathetic, Knowledgeable, Proactive, Reflective; NBPTS 1, 2, 3, 4, 5; NCTM 2.8)*
6. gain an understanding of alternative assessment for use with instruction in mathematics (NCTM, 1990, 2000; Stein, et. al., 2000; Moon & Schulman, 1995).

*(Lifelong Learners, Adaptive, Empathetic, Knowledgeable, Proactive, Reflective; NBPTS 1, 2, 3, 4, 5; NCTM 2.8)*

## TEXTS, READINGS, AND INSTRUCTIONAL RESOURCES

Required Texts: NONE

\*Selected journal articles will be used based on individual student needs

Readings:

AIMS Education Foundation. *Activities integrating mathematics and science*. (1995). Fresno, CA: AIMS Education Foundation

Barber, J. (1988). *Bubble-ology*. Berkeley, CA: Great Explorations in Math and Science (GEMS).

Bassarear, T. (2005) *Mathematics for elementary school teachers, 3<sup>rd</sup> edition*. Boston, MA: Houghton Mifflin Company.

Clarke, D. (1999). *Constructive assessment in mathematics: Practical steps for classroom teachers*. Berkeley, CA: Key Curriculum Press.

Dyer, M., & Moynihan. (2000). *Open-ended question in elementary mathematics instruction & assessment*.

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: National Council of Teachers of Mathematics.

National Council of Teachers of Mathematics. (2001). *Mathematics assessment: Cases and discussion questions for grades K-5*. Reston, VA: National Council of Teachers of Mathematics.

National Council of Teachers of Mathematics. (2001). *Learning from assessment: Tools for examining assessment through standards*. Reston, VA: National Council of Teachers of Mathematics.

National Council of Teachers of Mathematics. (2001). *Mathematics assessment: Myths, models, good questions, and suggestions*. Reston, VA: National Council of Teachers of Mathematics.

Van de Walle, J. A. (2007) *Elementary and middle school mathematics: Teaching developmentally, 6<sup>th</sup> edition*. Boston, MA: Pearson Education, Inc.

## ASSIGNMENTS, EVALUATION PROCEDURES, AND GRADING POLICY

### Assignments

1. **Learning Festival:** Each student will attend the University of West Georgia Learning Festival in its entirety. Each class member should receive a **copy of the Learning Festival Session Form** by which each student will document the sessions attended. Student will submit 3-5 page reflection paper discussing their experiences and knowledge gained from attending the UWG Learning Festival morning sessions. (Graded by a Rubric; Objectives: 1, 4, & 5) **Paper Due: Friday, June 13, 2009.**
2. **Action Research Online Training Module:** Each student will participate in an action research online training module. The training module will be available to participant from **June 8, 2009 to June 30, 2009** on the course website. This training will prepare participant to design an action research project which examines some aspect of their mathematics instruction. The project should reflect pedagogical content knowledge

learned in the UWG Learning Festival. Students will participate fully in all training activities. (Graded by checklist; Objectives: 1, 4, & 5)

3. **Action Research Discussion Groups:** Students in small groups will participate in synchronous online reflective discussions regarding what each student plans to study about his or her mathematics teaching and/or student learning. The purpose of these discussion groups is to aid student in designing an action research project. Students will discuss the reasons for their selections and jointly analyze barriers and arrive at solutions for successfully conducting selected action research projects. The dates for these discussions will be finalized in class. (Graded by checklist; Objectives: 1, 4, & 5)
  
4. **Action Research Project in Mathematics:** Following the group discussions, students will create an action research project for the 2009-2010 school year. This action research project will allow participants to examine some aspect of their teaching of mathematics for the purpose of professional growth and teacher renewal. The project must reflect knowledge gained from the UWG Learning Festival and from the action research online training module as well as the small group discussions. These will be posted on the course WebCT website. Graded by a Rubric; Objective 3) **Postings will be due Tuesday, June 30, 2009.**
  
5. **Article Reflections:** Students will find and reflect on five journal articles related to their action research projects. Each journal article reflection should follow the *Learning From A Professional Journal* guidelines. (Graded by a Checklist; Objective 3) Journals will be due on **June 30, 2009.**

**Tardy Submission of Assignment Policy:** Assignments that are submitted after the due date will be reduced by 10%.

### Evaluation Procedures

Learning Festival	50 points	A = 100 - 90%
Math/Science Workshop	50 points	B = 89 - 80%
Reflective Discussion	50 points	C = 79 - 70%
GPS Professional Growth Plans	100 points	D = 69 - 60%
Journal Article Reflections	50 points	
Professionalism	20%	
<b>Total</b>	<b>300 points</b>	

### Professionalism Policy

Professionalism will be graded as follows:

Grade	Tardies/Left Early	Unexcused Absences	Unprofessional Conduct	Late Assignments
A	0-1	0	0	0

