George Mason University
EDCI 547: TECHNOLOGY in the MATH CLASSROOM (1)
Summer 2013

Instructor	Dr. Molly Rothermel Rawding
Phone	207.450.9375
Email	MollyRawding@gmail.com
Office Hours	By appointment

Jul 01, 2013 - Aug 02, 2013

Week of July 1: Independent assignments & readings

Week of July 8: Meet Thompson Hall L019 ~ 9:30-11:45am

Week of July 15: Meet Thompson Hall L019 ~ 9:30-11:45am

Week of July 22: Meet at Westlawn Elementary School in Falls Church ~ 9am-12noon

Week of July 29: Meet at Westlawn Elementary School in Falls Church ~ 9am-12noon

*Coursework is integrated with EDCI 522.

I. Course Description

An introduction to methods for teaching all children including those from non-mainstreamed populations developmentally appropriate topics in arithmetic, geometry, algebra, probability and statistics with a focus on integrating technology in a meaningful way. Students work with manipulatives and technologies to explore mathematics, solve problems, and learn ways to teach mathematics content to children. Field experience is required.

Prerequisite: Admission to the Elementary Education Licensure Program

II. Student Outcomes

This course will enable students to:

A. Know what constitutes the essential topics in mathematics of the modern early and intermediate grades school program.

B. Identify and use selected manipulatives and technology such as Linking Cubes, Attribute Blocks, Geoboards, Base-10 Blocks, Fraction Circles, Tangrams, calculators, and computers to teach appropriate mathematics content topics in the early and middle grades.

C. Identify and use various instructional strategies and techniques (cooperative and peer group learning, activity centers, laboratories and workshops, teacher-directed presentations, etc.) to teach mathematical content topics appropriate for the early and intermediate grades to all children including those from non-mainstreamed populations.

D. Identify and use alternative methods for assessing students' work in mathematics in the early and intermediate grades.

E. Solve problems in the mathematical content areas of logic, number theory, geometry, algebra, probability, and statistics appropriate for adaptation to the early and intermediate grades.

F. Know and explain what is a standards-based mathematics curriculum, what are the key elements of the National Council of Teachers of Mathematics Principles and Standards for School Mathematics and what are the key elements of the Virginia Standards of Learning for Mathematics.

III. Relationship to Program Goals and Professional Organizations

Student Outcomes Referenced to Selected National Standards

Course Student Outcomes (above)	NCTM Principles and Standards	ISTE NETS	INTASC
A	S1, S2, S3, S4, S5	SI	P1, P7
B	S10	SII	P1, P2, P6
C	P1, P2, P3, P4, P6	SII	P1, P2, P3, P4
D	P5	SIV	P3, P8
E	S1, S2, S3, S5, S6	SI	P4, P6
F	S1-10, P1-6	SI	P1, P7, P9

Key:
NCTM Principles and Standards = National Council of Teachers of Mathematics Principles and Standards for School Mathematics (2000), where P = principles and S = standards.
ISTE NETS = International Society for Technology in Education National Education Technology Standards 2000, where S = standard number
INTASC = Standards for Licensing Beginning Teachers, where P = principles

IV. Nature of Course Delivery

In this course we will begin an inquiry into mathematics teaching and learning that will guide you in your first teaching job and give you the tools that will enable you to continue to inquire and learn as part of your work as a teacher. Class sessions will be interactive and will include a variety of hands-on experiences with concrete and virtual manipulatives appropriate for elementary school mathematics. We will explore the teaching of mathematics, investigating both *what* to teach and *how* to teach it. We will explore what it means to do mathematics and what it means to understand mathematics through individual, small group, and large group mathematical problem solving. We will investigate ways to represent understandings of mathematical concepts, communicate reasoning about mathematical ideas, and construct mathematical arguments. We will investigate and read about ways children might represent mathematical concepts, looking at ways to help children build connections and see relationships among mathematical ideas. We will explore characteristics of a classroom environment conducive to mathematical learning by reading and discussing the importance of mathematical tasks, mathematical tools, the roles of teachers and students, and the assessment of mathematical understanding. Attendance and engaged participation is essential.

V. Required Texts & Readings

Articles and other readings will be posted on Blackboard.

VI. Course Requirements and Assignments

Guidelines for Achievement
1. Be on time.
2. Come ready and prepared to learn.
3. Respect your rights & the rights of others to learn.
4. Work at learning.
5. Ask for support.

The assignments throughout the class are intended to further your understandings of what it means to teach, learn, and assess mathematics in light of current reforms in mathematics education with a focus on the integration of technology. All assignments are to be turned in to your instructor on time. **LATE ASSIGNMENTS**: Late work will not be accepted for full credit. If the student makes prior arrangements with the instructor, assignments turned in late will receive a 10% deduction from the grade per late day or any fraction thereof (including weekends and holidays). Type all papers in 12 point Times New Roman using one-inch margins.

VII. Evaluation Schema

Determination of the Final Grade:

Graduate Grading Scale

A	93%-100%	B+	87%-89%	C	70%-79%
A-	90%-92%	B	80%-86%	F	Below 70%

Technology Prompt #1 (due July 5)	20 points
Technology Prompt #2 (due July 12)	20 points
Technology Prompt #3 (due July 12)	20 points
Technology Prompt #4 (due July 19)	20 points
Technology Prompt #5 (due July 26)	20 points

Rubric (refer to guidelines for Mathematics Content/Pedagogy Responses**)**

0 points	Prompt/Review is not completed yet
10 points	Prompt/Review is completed; the requirements for length and depth need to be reviewed and revised.
20 points	Prompt/Review is completed (all requirements met) and ideas are well-developed.

The mathematics education courses in GSE's Elementary Education Program integrate pedagogy and mathematics content appropriate for the elementary school grades. For students to earn a grade of A in the course, they must demonstrate excellence in *both* the pedagogical knowledge and the content knowledge of the mathematics appropriate at their level of teaching. Thus, the grading in the course is structured to help evaluate fairly student excellence in both areas. Students who demonstrate excellence in both pedagogical knowledge and content knowledge receive grades of A.

VIII.   Course Schedule

Jul 01, 2013 - Aug 02, 2013

Week of July 1: Independent assignments & readings

Week of July 8: Meet Thompson Hall L019 ~ 9:30-11:45am

Week of July 15: Meet Thompson Hall L019 ~ 9:30-11:45am

Week of July 22: Meet at Westlawn Elementary School in Falls Church ~ 9am-12noon

Week of July 29: Meet at Westlawn Elementary School in Falls Church ~ 9am-12noon

×÷

Dates	Topic/Learning Experiences	Readings & Assignments
Week of July 1	What are some benefits of technology in the mathematics classroom? What experiences develop early number sense?	***Setting the stage for Best Practices*** Read Van de Walle: Chapters 7-8 Go to http://illuminations.nctm.org Explore the applets for **early number sense** and evaluate the technology. **Technology prompt #1** Pick two of your favorites to evaluate. What did you like about the applet? How does it connect to the reading? What questions do you have? Then reply to at least one classmate on Bb.
Week of July 8	How can technology be used in a meaningful way?	***Review chapter 7 in Van de Walle*** **Technology Prompt #2**:Reflection on Chapter 7- *Writing to Learn #1* **Technology Prompt #3:** Complete student exploration and review lesson from www.Explorelearning.com. (sign up for a 30-day trial account) **Extra learning experience:** Create supplemental activities to go along with the lesson.
Week of July 15	TEACHING MATHEMATICS WITH TECHNOLOGY *with a focus on Data, Statistics, & Probability*	***Reading from Van de Walle*** Chapter 21 Developing Concepts of Data Analysis Chapter 22 Exploring Concepts of Probability **Technology Review #4:** Review the "Online Resources" at the end of chapter 21 and 22. Select two resources that you like and think would be useful to use in the classroom. Why do you like the resource? What can it do? How can students "discover" math using it?
Week of July 22	How can technology be integrated into lessons and activities?	Read article from TCM (will be posted on Bb)

Week of July 29	How can technology improve learning experiences?	Read article from TCM (will be posted on Bb) **Technology Review #5**

MASON'S COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT

Student Expectations
- Students must adhere to the guidelines of the George Mason University Honor Code [See http://oai.gmu.edu/honor-code/].
- Students with disabilities who seek accommodations in a course must be registered with the George Mason University Office of Disability Services (ODS) and inform their instructor, in writing, at the beginning of the semester [See http://ods.gmu.edu/].
- Students must follow the university policy for Responsible Use of Computing [See http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/].
- Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.
- Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.*
- Students are expected to exhibit professional behaviors and dispositions at all times.

Campus Resources
- The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See http://caps.gmu.edu/].
- The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing [See http://writingcenter.gmu.edu/].
- For additional information on the College of Education and Human Development, Graduate School of Education, please visit our website [See http://gse.gmu.edu/].
- *The university has a policy that requests students to turn off pagers and cell phones before class begins; however, you may leave your cell phone on vibrate to receive emergency calls in class. If your phone is set to vibrate, then please keep your phone easily accessible, immediately accept the call so it does not continue to vibrate, say "please hold," and walk outside the room before beginning your conversation. Laptops and PDAs may be used in class during group and individual work time to maintain emergency contact and assist with you with your work, but laptops must be kept closed and PDAs face-down during whole class discussions. Register for campus alerts at https://alert.gmu.edu. An emergency poster exists in each classroom explaining what to do in the event of crises. Further information about emergency procedures exists on http://www.gmu.edu/service/cert.
- The College of Education and Human Development strives to represent a set of core values that drive the work of faculty and students. These values of collaboration, ethical leadership, innovation, research-based practice, and social justice are further described on the CEHD website http://cehd.gmu.edu/values/.