

George Mason University

EDCI 547-001 Integrating Technology in Elementary Classrooms: Mathematics (1 credit),

Instructor

Office Phone

Office Thompson Hall

Email

Class Meets

The course is offered in conjunction with EDCI 552 Math Methods.

Office Hours

Prerequisites: Admission to the Elementary Licensure Program.

Corequisites: Enrollment in EDCI 552.

Course description: This course studies the development and integration of technology in the elementary education mathematics curriculum.

NATURE OF COURSE DELIVERY:

Students in this course will participate in two face-to-face meetings and complete four learning modules through online asynchronous classes. Students will read educational research, utilize online resources, and contribute to conversations on discussion boards.

LEARNER OUTCOMES:

This course is designed to enable teacher candidates to:

- A. plan interdisciplinary learning experiences that enable elementary students to integrate knowledge, skills, and methods of inquiry within the mathematics curriculum;
- B. identify how students differ in their approaches to learning and create instructional opportunities that are adapted to diverse learners;
- C. select appropriate materials, tools, and technologies to achieve instructional goals with all learners.

Additionally, this course supports the CEHD Core Values of collaboration, ethical leadership, research-based practice, social justice, and innovation. Statements of these goals are at <http://cehd.gmu.edu/values/>.

PROFESSIONAL STANDARDS:

This course addresses the following National and State Standards:

[Association for Childhood Education International](#)

2.3 Mathematics—Candidates know, understand, and use the major concepts, procedures, and reasoning processes of mathematics that define number systems and number sense, geometry, measurement, statistics and probability, and algebra in order to foster student understanding and use of patterns, quantities, and spatial relationships that can represent phenomena, solve problems, and manage data.

3.1 Integrating and applying knowledge for instruction—Candidates plan and implement instruction based on knowledge of students, learning theory, subject matter, curricular goals, and community.

3.2 Adaptation to diverse students—Candidates understand how elementary students differ in their development and approaches to learning, and create instructional opportunities that are adapted to diverse students.

3.3 Development of critical thinking, problem solving, performance skills—Candidates understand and use a variety of teaching strategies that encourage elementary students' development of critical thinking, problem solving, and performance skills.

[International Society for Technology in Education \(ISTE\) National Educational Technology Standards for Teachers:](#)

2. Design and Develop Digital-Age Learning Experiences and Assessments:

Teachers design, develop, and evaluate authentic learning experiences and assessment incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS•S Teachers.

ARTICLES AND RESOURCES:

- A. *Teaching Mathematics with Virtual Manipulatives, Grades K-8*, Patricia S. Moyer-Packenham
- B. *Elementary and Middle School Mathematics: Teaching Developmentally (7th Edition)*, John A. Van de Walle, Karen S. Karp and Jennifer M. Bay-Williams
- C. Journal articles and links to websites posted on Blackboard, available at <http://mymason.gmu.edu>.

COURSE ASSIGNMENTS, PERFORMANCE-BASED ASSESSMENT, AND EVALUATION CRITERIA:

A. Assignment #1:

- a. Option 1: Evaluate two internet-based activities using criteria based on Goldenberg (2000), Moyer-Packenham (2010), and excerpts from Underwood et al. (2005). One of the online tools you analyze should exemplify how technology can be used to enhance mathematics teaching and learning, and one should be a poor example and meet few of the criteria discussed in class. To complete this assignment, fill out the evaluative template for each of the tools (posted in the learning module). Then write a short paper comparing the activities. (25%)
- b. Option 2: Create a Smartboard presentation following the requirements on the assignment guide provided.

B. Assignment #2: Design and teach a lesson or activity that uses technology to support a problem-based approach to teaching math. The teaching experience can take place with the whole class, a small group, or even just one student. Examples of this type of activity include using an interactive whiteboard, leading students through a high-quality activity in the computer lab, designing an activity for a learning center, or providing one-on-one remediation or acceleration. Other ideas are also possible; check with the professor before planning the activity. The technology that you choose should support the learning of mathematics rather than being the focus of the lesson (i.e. design a problem that students can solve by using a spreadsheet rather than walking them through a lesson about how to use a spreadsheet). The technology should be an integral part of the lesson, not an optional add-on. (25%)

C. Assignment #3: Locate three different virtual manipulatives or applets that support the mathematical content you will address in the student assessment project you are completing for EDCI 552. Using the template posted in the online module, analyze the models you have selected and evaluate them on their effectiveness and fidelity to the mathematical concept. (25%)

D. Class participation.

Participation. Students are expected to complete all activities in each learning module. A key component of participation in this course is contributing to the discussion boards provided for each module.

Course completion. It is your responsibility to complete all activities by the posted due dates. (25%)

	Assignment 1	Assignment 2	Assignment 3	Discussion Board Posts
Standards				
<i>ACEI 2.3 Mathematics—Candidates know, understand, and use the major concepts, procedures, and reasoning processes of mathematics that define number systems and number sense, geometry, measurement, statistics and probability, and algebra in order to foster student understanding and use of patterns, quantities, and spatial relationships that can represent phenomena, solve problems, and manage data.</i>	X	X	X	X
<i>ACEI 3.1 Integrating and applying knowledge for instruction—Candidates plan and implement instruction based on knowledge of students, learning theory, subject matter, curricular goals, and community.</i>	X	X	X	X
<i>ACEI 3.2 Adaptation to diverse students—Candidates understand how elementary students differ in their development and approaches to learning, and create instructional opportunities that are adapted to diverse students.</i>		X		X
<i>ACEI 3.3 Development of critical thinking, problem solving, performance skills—Candidates understand and use a variety of teaching strategies that encourage elementary students’ development of critical thinking, problem solving, and performance skills.</i>		X		X
<i>ISTE 2. Design and Develop Digital-Age Learning Experiences and Assessments: Teachers design, develop, and evaluate authentic learning experiences and assessment incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the NETS•S Teachers.</i>	X	X	X	X

COURSE SCHEDULE

STUDENT SERVICES

University Libraries

University Libraries provides resources for distance students. [See <http://library.gmu.edu/distance>].

Writing Center

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>]. You can now sign up for an Online Writing Lab (OWL) session just like you sign up for a face-to-face session in the Writing Center, which means YOU set the date and time of the appointment! Learn more about the Online Writing Lab (OWL) (found under Online Tutoring).

Counseling and Psychological Services

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>].

Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act of 1974 (FERPA), also known as the "Buckley Amendment," is a federal law that gives protection to student educational records and provides students with certain rights. [See <http://registrar.gmu.edu/privacy>].

STUDENT EXPECTATIONS

Academic Integrity

Students must be responsible for their own work, and students and faculty must take on the responsibility of dealing explicitly with violations. The tenet must be a foundation of our university culture. [See <http://academicintegrity.gmu.edu/distance>].

Honor Code

Students must adhere to the guidelines of the George Mason University Honor Code [See <http://academicintegrity.gmu.edu/honorcode>].

MasonLive/Email

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. [See <https://thanatos.gmu.edu/masonlive/login>].

Patriot Pass

Once you sign up for your Patriot Pass, your passwords will be synchronized, and you will use your Patriot Pass username and password to log in to the following systems: Blackboard, University Libraries, MasonLive, myMason, Patriot Web, Virtual Computing Lab, and WEMS. [See <https://thanatos.gmu.edu/passwordchange/index.jsp>].

Responsible Use of Computing

Students must follow the university policy for Responsible Use of Computing. [See <http://universitypolicy.gmu.edu/1301gen.html>].

Students with Disabilities

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>].

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%

GSE SYLLABUS STATEMENT OF EXPECTATIONS:

A. The Graduate School of Education (GSE) expects that all students abide by the following: Students must adhere to the guidelines of the George Mason University Honor Code [See <http://academicintegrity.gmu.edu/honorcode/>].

B. 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/>].

C. Students must follow the university policy for Responsible Use of Computing [See <http://universitypolicy.gmu.edu/1301gen.html>].

D. 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.

E. Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.

F. Students are expected to exhibit professional behaviors and dispositions at all times.

CEHD STATEMENT OF CAMPUS RESOURCES:

A. 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/>].

B 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/>].

Approved March 2004, Revised April 2012.