

*University of Pittsburgh*  
*School of Education*

I & L 2434  
Elementary Mathematics Methods  
Fall 2019

Tuesday 4:30-7:10

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Office Hours: by appointment

## ABOUT THE COURSE

This course is based on the idea that mathematics and science teaching and learning are problem-solving activities. The giving and taking of information is not sufficient for success in either. Success requires the ability to collect, interpret, organize, and select useful information and the ability to think independently, flexibly, creatively, and logically in order to solve the infinite variety of novel problems that one faces in these two domains. The activities and assignments in this course are designed to motivate you to apply a point of view about how mathematics and science might be learned by young children and how you can facilitate that learning.

The specific goals for the course are listed below. It is important to note that these goals are developed over a professional career. In one semester, one can only lay the foundation for this development. However, the strength of that foundation is directly related to your commitment and effort to accomplish such goals. Specifically, it is expected that through this course you will begin to:

- develop knowledge, skills and dispositions about mathematics and science that will allow you to reflect critically on your mathematics and science teaching; develop your own model of how mathematics and science is learned that continues to grow, to be elaborated, and to be modified as new experiences and information are integrated; and recognize that this course provides the foundation for your development and therefore is the beginning of a life-long commitment to growth and development as a mathematics and science teacher;
- deepen your understanding of how children learn mathematics and science, how children's mathematics and science differs from the teacher's, and how a teacher can facilitate the mathematical and scientific growth and development of **all** children;
- expand your mathematical and scientific understanding, your views regarding the nature of mathematics, science and mathematical and scientific activity, and develop teaching strategies which can facilitate children's mathematical and scientific thinking and understanding - listening to children, observing their activities, communicating with them, interpreting their thinking, and generating tasks that use multiple tools to foster their conceptual growth;
- develop methods of assessing student learning that provide a multi-faceted portrait of what students understand and can do, and of using this assessment to guide your creation of an environment conducive to the children's learning; and
- recognize and appreciate the value of collaboration through your interactions in the course and begin to see yourself as part of a larger community of educators who are involved in creating learning environments for children that emphasize thinking, reasoning, problem solving and the communication of mathematical and scientific ideas.

## COURSE MATERIALS

### Required Text/Materials

1. Van de Walle, J, Karp, K, and & Bay-Williams, J. (2019). Elementary and Middle School Mathematics: Teaching Developmentally. Tenth Edition. Pearson. [Readings from this document are labeled VDW.]
2. Michaels, S., Shouse, A., & Schweingruber, H. (2008). Ready, Set, SCIENCE! Putting Research to work in K-8 classrooms. National Research Council.
3. CourseWeb site – Other articles and/or chapters will be found online via the CourseWeb site under the “Readings” tab on the main menu. [CourseWeb readings will be identified by author and indicated with a CW.]

## POLICIES AND PROCEDURES

### Attendance

The expectation is that you will be **present, on time, and prepared** for every class. Attendance is expected at all scheduled classes. Just as any professional teacher does in school, in the event of an emergency or other special circumstances, please contact the instructor if you will not be present in class for any reason. Missing **more than one class** will be considered excessive and will result in a lower grade for the course (one letter grade per absence beyond one).

### Class Participation

All students are expected to complete in-class assignments and to participate in class discussions and activities in a reflective and professional manner. Average performance requirements (7 out of 10 points) include the following:

- Being prepared for class (including completion of reading and writing assignments in advance, bringing all needed materials to class, etc.)
- Being on-time for class
- Listening respectfully to others
- Occasionally contributing to discussions in a professional and thoughtful manner
- Occasionally asking questions of the instructor and fellow students when appropriate

To obtain more than 15 points for participation, you must surpass these minimal requirements (i.e., participate in discussions and raise questions on a regular basis).

### Late Assignments

Assignments are due at the beginning of class, unless otherwise indicated. For all late assignments, the maximum number of points available on the assignment will be reduced by 1

point for each day the assignment is late. For example, if a 20-point assignment is submitted three days beyond the due date, the maximum number of points that could be awarded for the assignment is 17. If for any reason, a student anticipates (at least 24 hours in advance) they will not be able to complete the assignment on the specified date, an extension will be granted to a date agreed upon by the student and instructor. This will be the new “due date” to which the initial policy applies. There will be no further extension for this assignment.

### **Communication Expectations**

Communications between class sessions will be primarily made via courseweb in the form of emails or announcements. Your Pitt-assigned email account will be used as the primary form of communication between class sessions. If you primarily use another account, be sure that your Pitt email is forwarded to this other account.

### **Writing Standard**

The quality of your ideas as well as your presentation will be taken into consideration when assigning grades. As a teacher you are expected to produce written documents that are easily read, well organized, clearly understood, grammatically correct, and include no spelling errors. I have the same expectations of your work. Thus, you are encouraged to use the grammar- and spell-checker capabilities of your word processor, and to ask your peers to proofread your papers prior to submitting them. Your grade will be reduced if you fail to attend to these aspects of your written assignments.

### **Academic Integrity**

As a student, you have the responsibility to be honest, and to conduct yourself in an ethical manner while pursuing academic studies. Should you be accused of a breach of academic integrity, procedural safeguards including provisions of due process have been designed to protect student rights. These guidelines can be found on the school of education website: <https://www.education.pitt.edu/portals/0/current%20students/Policies%20and%20Forms/policies/academic%20integrity%20guidelines.pdf>

### **Disability Resources and Services**

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services (DRS), 140 William Pitt Union, (412) 648-7890, [drsrecep@pitt.edu](mailto:drsrecep@pitt.edu), (412)228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

## **Grading**

Class Participation	20 points
Classroom Inventory	20 points
Learning Center Planning & Presentation	20 points
Science Talk	20 points
<u>Planning, Teaching, Reflecting</u>	<u>20 points</u>
Total	100 points

<u>POINTS</u>	<u>GRADE</u>	<u>POINTS</u>	<u>GRADE</u>	<u>POINTS</u>	<u>GRADE</u>
97-100	A+	80-82	B-	67-69	D+
93-96	A	77-79	C+	63-66	D
90-92	A-	73-76	C	60-62	D-
87-89	B+	70-72	C-	0-59	F
83-86	B				

## **MAJOR ASSIGNMENTS**

**Classroom Inventory** (Individual) (20 points) Due October 1

**Center Design & Implementation** (Pairs)(20 Points) Due September 17

**Science Talk** (individual) (20 points) Due November 12

**Planning, Teaching, Reflecting-5 Practices Lesson** (Individual) (20 Points) varies (Nov 19- Dec 10) see schedule below

## CLASS SCHEDULE

<b>Date</b>	<b>Practice Focus</b>	<b>Content Focus</b>	<b>Assignment Due</b>
Aug 27	Orchestrating Productive Discussion	Algebra-Patterns	Reading: Van De Walle (VDW) Ch 13
Sept 3	Designing/Planning for Centers	Early number to Place Value	Reading: Toolbox for Early Learning (CW); VDW chapters 7, 9 & 10
Sept 10	Workshop Centers	Patterns	TBD Reading on Patterns
Sept 17	Center enactment	Patterns	<b>Centers</b>
Sept 24	Assessment: Formative	Physical Science	Reading: VDW Ch 5
Oct 1	Science Talks	Life Science	Reading: TSELL Chs 1&2 (CW) <b>Classroom inventory</b>
Oct 8		Engineering	TBD reading
Oct 15	Planning, Teaching Reflecting: Launch & Explore (Anticipate & Monitor (assess & advance))	Time, Money, & Operations	
Oct 22	Planning, Teaching Reflecting: Discuss & Close (Select, Sequence, & Connect)	Time, Money, & Operations	<b>Select &amp; Sequence;</b> Propose Investigation Lesson
Oct 29	Workshop Investigation Lessons		
Nov 5	Investigation Lesson Leni and Kaitlin Anne (Lesson <b>plans due Nov 3</b> )		
Nov 12	Investigation Lesson Becca and Branden (Lesson <b>plans due Nov 10</b> )		<b>Science Talk</b>
Nov 19	Investigation Lesson Angela and Alex (Lesson <b>plans due Nov 17</b> )		<b>Planning Teaching Reflecting (Leni, Kaitlin Anne, Becca &amp; Branden)</b>
Nov 26	Happy Thanksgiving!!	No Class	
Dec 3	Investigation Lessons Leah and Janice (Lesson <b>plans due Dec 1</b> )		<b>Planning Teaching Reflecting (Angela &amp; Alex)</b>
Dec 10			<b>Planning Teaching Reflecting (Leah &amp; Janice)</b>