

ELED/BED 4310
Teaching Math in Elementary School
Spring 2019 Syllabus

University of Texas at El Paso
 College of Education, Department of Teacher Education

Instructor	Dr. Song An	Email: saan@utep.edu
Class Locations	Reyes Elementary School (Tuesday Session) Mesita Elementary School (Thursday Session)	
Office Phone	915-747-7616	
Office Hours	College of Education (Education Building 201 & 808) Monday 10:00 am– 12:15 am Wednesday 10:00 pm– 12:15 pm (Other time by appointment)	
Class Time	12:00 pm to 2:50 pm Online discussions throughout the semester	
This syllabus is subject to change as needed. Any changes to the syllabus will be announced in class.		

Course Description

Based on a vision articulated by the National Council of Teachers of Mathematics (NCTM) and Texas Education Agency (TEA), this course introduces pre-service teachers to pedagogy methods, strategies, and materials for teaching mathematics in elementary classrooms. Students will also demonstrate mathematics content knowledge to plan and teach in EC-6 classrooms. Emphasis will be on diverse approaches, inquiry-based learning, equity principle (mathematics for all) and development of conceptual understanding on topics such as: number sense, patterns and basic algebra, geometry and measurement, data analysis and probability. This course will be an integrated minds-on/hands-on activities and discussions in which you will have the opportunity to:

1. Combine theory with experience in creating and implementing culturally inclusive curriculum and teaching strategies
2. Plan and participate in hands-on exploration
3. Practice reflective teaching using theoretical and practical implications of these experiences
4. Demonstrate knowledge and skill in TExES Elementary Comprehensive (EC) Competencies (Mathematics, Domain II) and Pedagogy and Professional Responsibility (PPR) Competencies. The TExES standards and competencies will be integrated in this course and all related assignments.
5. Understand the role that technology holds in the profession of teaching.

Required Textbook

Van de Walle, J., Karp, A., Bay-Williams, J. (2009). *Elementary and Middle school mathematics: Teaching developmentally (7th ed.) Texas Edition*. Boston, MA: Pearson.

Course Objectives/Student Learning Outcomes

1. Analyze research-based practices for improving mathematics instruction	Discussions; projects assessed through the use of a rubric; oral presentations assessed through the use of a rubric; lesson plans; final project; and review questions.
2. Design effective standards-based classroom activities for EC-6 students and reflect on student outcomes.	Discussions; leading facilitators, lesson plans; and final project.
3. Develop varied formative assessment practices and assess mastery of the same essential math concepts in different ways	Teaching and learning theories activities, final project, oral presentations, leading facilitators and lesson plan, and online discussions.
5. Apply instructional strategies to promote mathematics learning among students of a wide range of academic diversity including ESL and special needs students.	Online activities and in-class discussions, final project; oral presentations, lesson presentation; lesson plans; field-based assignment.
6. Differentiate math instruction based on students' learning styles, interests, and readiness levels; and modify lessons based on the synthesis of the relationship between problem solving and communication.	Online activities and in-class discussions, final project; oral presentations, lesson presentation assessed through the use of a rubric; and lesson plans; field-based assignment.
7. Align math classroom environments with real world environments by infusing problem-solving strategies, and active learning; and apply technology tools in classroom instruction and connect math activities to everyday experiences and the real world.	Online activities and in-class discussions, final project; oral presentations, lesson presentation assessed through the use of a rubric; lesson plans; field-based assignment.
8. Modify lessons based on the synthesis of the relationship between problem solving and communication.	Online activities and in-class discussions, final project; oral presentations, lesson presentation assessed through the use of a rubric; lesson plans; field-based assignment.

Recommended Resources

1. **NCTM Illuminations:** <http://illuminations.nctm.org/>
2. **NCTM Principals and Standards (2000):** <http://standards.nctm.org/>
3. **Early Algebra:** www.ase.tufts.edu/education/earlyalgebra/default.asp
4. **Annenberg Media:** <http://www.learner.org/index.html>
5. **National Library of Virtual Manipulatives:** <http://nlvm.usu.edu/en/nav/vlibrary.html>
6. **Mathematics Toolkit (2001):** <http://www.utdanacenter.org/mathtoolkit/>
7. **Texas Education Agency (TAKS Released Tests).** <http://www.tea.state.tx.us/>

Attendance, Participation and Professionalism

Attendance of individuals in the class is required and unexcused absences will result in a grade reduction. University rules regarding absences will be followed for the required class meetings. There will be a student sign-in sheet at the beginning of each class. If a student misses a session, it is the responsibility of the student for knowing and completing all work required. Each attendance will count towards the final grade. ***Two tardies (including early leaves) will count as one absence. More than two absences may result in a student earning one-letter grade lower in the course.***

Students are expected that students will attend all classes and actively participate in working on projects and class discussions. Students are expected to prepare for each class session. Lateness to class is strongly discouraged. With the emphasis on collegiality it is important that all group members be in class to contribute to the group's effort in developing an understanding of what it means to teach mathematics effectively.

All teaching candidates are expected to demonstrate the ethical and professional values associated with Elementary Level Education. It is critical teaching candidates adopt and exhibit a professional demeanor at each point in their teacher preparation. Evidence of professional dedication will be expected through all work during classes and practicum, seminar, internship, and clinical experiences. Credit for participation and professionalism will be part of the evaluation. ***Wireless phone usage is strictly prohibited in class.***

Inclusiveness and Equity

Learning happens only when we feel respected as a whole human being. My top priority in our classroom is to cultivate relationships of trust and respect and a sense that we see each other as whole, complex human beings. That you experience this in our classroom is important for the sake of your learning in our course *and* for the sake of your future students' learning, so that you feel able to cultivate such relationships with them. To that end, I want you to know that all of you is welcome in our classroom space—all the parts of you as a person are welcome in our discussions, our activities, our assignments, and in our assessments. We are all complex people with a variety of perspectives, experiences, challenges, assets, and resources—our gender identities, our sexual orientations, our religions, our races, our ethnicities, our economic statuses, our immigration statuses, our parenthoods, our veteran statuses, our ages, our languages, our abilities and disabilities. All the parts of you are welcome in our learning community to the extent that you feel comfortable bringing them in. I strive to show respect for the variety and wholeness in each of you, and I expect that each of you shows respect for each other as well. If you feel marginalized in our class, and you feel comfortable discussing it, I would like to know so that I can support you, protect you, and make changes that feel more inclusive and equitable. You can also talk with our Department Chair and/or you can report a complaint of discrimination to the University's Equal Opportunity Office, Kelly Hall, Third Floor, 915-747-5662 or eoaa@utep.edu.

Assignment Format and Late Assignments

All assignments must be submitted electronically unless specified. It is highly recommended you save all your work electronically and possibly a hardcopy for your records before turning it in. The following format is **required** for every assignment submitted. Deviating from the format may result in reduced points, returned paper, or rejection of the assignment completely. All assignments

should be single spaced and typed with 12-point font; page numbers should be included if more than one pages. **You must label your assignment as you save it containing your name and the assignment name.** Only assignments submitted complete and on time will be considered for full credit. Without evidence that you were unavailable (sick) for the entire range of days, the assignment will be given a zero. Any assignments turned more than one week late (or the range of dates for submission) will receive zero points.

Standards of Academic Integrity

Students are expected to uphold the highest standards of academic integrity. Any form of scholastic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are not attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOP) and available in the Office of the Dean of Students, may result in sanctions ranging from disciplinary probation, to failing grades on the work in question, to failing grades in the course, to suspension or dismissal among others.

Students with Disabilities Statement

If you have or believe you have a disability, you may wish to self-identify. You can do so by providing documentation to the Office of disabled Student Services located in Union E Room 203. Students who have been designated as disabled must reactivate their standing with the Office of Disabled Student Services on a yearly basis. Failure to report to this office will place a student on the inactive list and nullify benefits received. If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or the director of Disabled Student Services. You may call 747-5148 for general information about the Americans with Disabilities Act (ADA).

Course Requirement

Attendance and Class Participation

- **20 Points × 6**

Your active participation in each class session is vital to your learning as well as to the learning of other students in the class. I expect you to attend all class meetings prepared for active, collaborative, participation during the session, whether it is whole group discussion, small group activity, or individual reflection. Preparation for class involves completion of assigned readings and tasks. If you are unable to attend a particular class session, please let me know beforehand. You are responsible for contacting someone in the class to find out what transpired in your absence. Late work will not be accepted. It is your responsibility to get the instructor's sign-in passcode on sign-in sheet BEFORE each class meeting starts. Please return your sign-in sheet to me in our last class meeting to receive your attendance credits

Online Discussions

- **10 Points × 8**

This semester you will participate a series of 8 online discussions about strategies of teaching mathematics throughout the semester. You should post answers to each discussion questions (no less than 400 words), the answer should be brief, meaningful, well thought-out, and articulate. Post your first response by the due days and post your follow up responses in the following two days. Read all the postings of your peers, and interact with your peers in a positive manner. You will reply at least three of your classmates' posts in a meaningful way. ***Please type directly in the dialogue box, don't use attachment.***

Assignment 1: Story of My Math Learning --10 Points

Due: Second Class Meeting (Two pages of hand-drawing pictures)

In this assignment, you will create a graphic novel with 8-12 pictures on two piece of regular printing papers. On page one, you will draw 4-6 pictures to describe and illustrate your experiences of learning “numbers” including whole number computation, fraction, and algebra ” in elementary, middle, and high school. On page two, you will draw 4-6 pictures about your experiences of learning “geometry” in elementary, middle, and high school. First, draw all pictures to show four key moments during your math class. Please color your pictures so that they illustrate the emotions felt during the experience. Underneath each picture you will write two or three sentences of narration or dialogue describing what is happening in that picture. **Bring a hard copy of your drawings to class during our second face to face meeting.**

Assignment 2: Lesson Plan Development --10 points

Due: Feb 24 (No less than 400 words)

On your own or working with a partner in ELED/BED 4310, develop a detailed lesson plan. As you do this you should meet with your cooperating teacher to identify a lesson that you will be able to plan and teach during your field-based assignment. Be sure to discuss with him/her the subject standards and English Language Proficiency Standards (ELPs), essential questions and goals s/he has set out for the unit from which this lesson comes. You will need these in order to plan your lesson.

Begin by identifying one or more TEKS standards. Identify the corresponding English Language Proficiency Standards, as well as, any required modification to standards as required in Individual Education Plans (IEPS). Write your plan incorporating all parts contained in the template. Be sure to include a detailed outline of the learning activities. Include a variety of resources that you used in preparing the lesson (e.g., similar lesson plans that you found on the Internet, information from cooperating teacher, textbook, etc.). Attach these to your lesson plan.

Along with the lesson plan you should also attach all handouts you would provide students (this includes directions, worksheets, etc.). Include a brief description of the performance task(s) and other evidence (formative and summative assessment of the task and related language criteria) that you plan to use for your lesson (e.g., at end of hour have students write down 1-2 things they learned, etc.).

Outline the learning plan (teaching & learning activities). This plan should be aligned clearly with the desired results (i.e., geared towards having students meet the objectives, answer the essential questions, and be able to complete the assessment activities). The plan should include all of the following components:

- a. List of instructional materials & resources
- b. Timeline: next to each step, indicate approximate length of time you expect each step to take.
- c. Introductory activities: hook/capture student interest, set the stage, relate to previous learning (review), how this fit into what is to follow (preview), tell students what they will learn and be expected to do as a result of the lesson.
- d. Developmental activities: outline the content and outline the instructional strategies & learning activities. Include details what you will do, how you will organize/prepare students for tasks, and what students will do. If you plan to involve students in discussion, list key/stem questions that you might ask to generate discussion.
- e. Closing activities: list activities that you & students will do to summarize the lesson, reinforce what was covered, and tie everything together so students see how the lesson fits into the context of the rest of the course (what they have already done and what is coming next).
- f. Within the framework given above, integration of Sheltered Instruction Observation Protocol (SIOP) strategies and approaches are reflected and specified.
- g. Within the framework given above, integration of accommodations and modifications appropriate to address all learning styles and needs (differentiation).

Assignment 3: Analysis of Lesson Video --10 points

Due April 13 (No less than 400 words)

In this assignment, you will analyze the effectiveness of your lesson plan and your implementation using the *active learning lesson plan rubric* and *active learning lesson implementation rubric* as a guide. Use the following to guide you in developing this analysis.

After teaching the lesson, ***watch the video of your lesson***. Analyze and take notes on the following questions:

- a. How did I plan and teach the lesson so that the students were able to achieve the objectives of the lesson?
- b. How did I assess my students' achievement of the task and language objectives in the lesson (these could be informal - such as "name two things we learned.")?
- c. Were the steps to the lesson and instructions (a) clear in my plan (b) clear to the students when I explained these to them?
- d. How did I integrate and address the needs of English Learners (EL) in the classroom?
- e. How did I address the special student needs identified in Individual Education Plans (IEPs)?
- f. How did I differentiate for individual learning styles?
- g. How did I manage the students? How did the lesson plan motivate the students?
- h. How did I do? How can I further improve my lesson/instruction?

Assignment 4: Reflection of Lesson Implementation --10 points*Due April 20 (No less than 400 words)*

In this assignment we will write a reflection paper (giving specific examples from your lesson plan and/or video analysis), reflecting in depth as you ask yourself the following more in-depth questions. Note: You do *not* have to have *succeeded* in achieving all of these areas in your planning and teaching. However, what is important for you to be successful in this assignment is for you to (a) recognize where you are in your progress towards mastery of these and (b) explain where and how you still need to improve. As you reflect, address the in-depth questions listed below. Your paper should respond to each of these questions.

- a. How did I plan for and provide learning opportunities that supported the students' intellectual, social, and personal development?
- b. How did I create instructional opportunities that are adapted to students with diverse backgrounds and exceptionalities?
- c. How did I plan and use a variety of instructional strategies to encourage student development of critical thinking, problem solving, & performance skills for all students, including EL, Special Needs and other identified student learning needs?
- d. How did I plan and create a learning environment that encourage positive social interaction, active engagement in learning, & self-motivation?
- e. How did I plan and manage instruction based upon knowledge of subject matter, students, the community, and curriculum goals?
- f. To what extent did my plan and my teaching reflect by ability to use formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical, language development of the student?

Assignment 5: Proposal of My Math Teaching --10 Points*Due Last Class Meeting (Two pages of hand-drawing pictures)*

In this assignment, you will create a graphic novel with 8-12 pictures on two piece of regular printing papers. On page one, you will draw 4-6 pictures to describe and illustrate your plan of teaching “numbers” including whole number computation, fraction, and algebra ” for your own students in the future. On page two, you will draw 4-6 pictures about your experiences of learning “geometry” for your own students in the future. First, draw four pictures to show four key moments during your math class. Please color your pictures so that they illustrate the emotions felt during the experience. Underneath each picture you will write two or three sentences of narration or dialogue describing what is happening in that picture. **Bring a hard copy of your drawings to class during our second face to face meeting.**

Take Home Final Exam

- **50 Points**

At the end of the semester, you will have a take home exam, and the exam will cover teacher certification tests contents, class/online discussions, assignments, activities, and readings. You will have a whole week to prepare your answers, and the exam will be submit through the Blackboard.

Mathematics Generalist EC-6 Standards

MATHEMATICS STANDARD I:

Number Concepts: The mathematics teacher understands and uses numbers, number systems & their structure, operations and algorithms, quantitative reasoning and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.

MATHEMATICS STANDARD II:

Patterns and Algebra: The mathematics teacher understands and uses patterns, relations, functions, algebraic reasoning, analysis and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.

MATHEMATICS STANDARD III:

Geometry and Measurement: The mathematics teacher understands and uses geometry, Spatial reasoning, measurement concepts and principles and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.

MATHEMATICS STANDARD IV:

Probability and Statistics: The mathematics teacher understands and uses probability and statistics, their applications and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.

MATHEMATICS STANDARD V:

Mathematical Processes: The mathematics teacher understands and uses mathematical processes to reason mathematically, to solve mathematical problems, to make mathematical connections within and outside of mathematics and to communicate mathematically.

MATHEMATICS STANDARD VI:

Mathematical Perspectives: The mathematics teacher understands the historical development of mathematical ideas, the interrelationship between society and mathematics, the structure of mathematics and the evolving nature of mathematics and mathematical knowledge.

MATHEMATICS STANDARD VII:

Mathematical Learning and Instruction: The mathematics teacher understands how children learn and develop mathematical skills, procedures and concepts; knows typical errors students make; and uses this knowledge to plan, organize and implement instruction; to meet curriculum goals; and to teach all students to understand and use mathematics.

MATHEMATICS STANDARD VIII:

Mathematical Assessment: The mathematics teacher understands assessment and uses a variety of formal and informal assessment techniques appropriate to the learner on an ongoing basis to monitor and guide instruction and to evaluate and report student progress.

MATHEMATICS STANDARD IX:

Professional Development: The mathematics teacher understands mathematics teaching as a profession, knows the value and rewards of being a reflective practitioner and realizes the importance of making a lifelong commitment to professional growth and development.

General Calendar

Changes may be made in this syllabus when judged appropriate by the instructor

Date & Location	Class Topics/Activities		Reading								
Week 1 Jan 22/24	Module 1 Quantitative Reasoning	Overview	<i>Chapter 1-2</i>								
Week 2 Jan 29/31		Number Concepts	<i>Chapter 8-9</i>								
Week 3 Feb 5/7		Online Activity 1	<i>Chapter 10-11</i>								
Week 4 Feb 12/14		Field Experiences Online Activity 2	<i>Chapter 12-13</i>								
Week 5 Feb 19/21		Field Experiences Online Activity 3	<i>Chapter 3-4</i>								
Week 6 Feb 26/28	Module 2 Geometrical Reasoning	Geometry & Measurement I	<i>Chapter 19</i>								
Week 7 March 5/7		Field Experiences Online Activity 4	<i>Chapter 20</i>								
Week 8 March 12/14		Geometry & Measurement II	<i>Chapter 5</i>								
Week 9 March 19/21		SPRING BREAK									
Week 10 March 26/28		Field Experiences Online Activity 5	<i>Chapter 6</i>								
Week 11 April 2/4	Module 3 Algebraic Thinking	Field Experiences Online Activity 6	<i>Chapter 7</i>								
Week 12 April 9/11		Online Activity 7	<i>Chapter 14</i>								
Week 13 April 16/18		Field Experiences Online Activity 8	<i>Chapter 15</i>								
Week 14 April 23/25		Algebra & Data Analysis	<i>Chapter 16</i>								
Week 15 April 30/May 2		Fraction & Probability	<i>Chapter 17-18</i>								
Week 16 May 7/9	TAKE HOME FINAL EXAM										
Total 300 Pts	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Assignments</td> <td style="width: 50%; text-align: right;">(10 Pts×5=50 Pts)</td> </tr> <tr> <td>Online Discussion</td> <td style="text-align: right;">(10 Pts×8=80 Pts)</td> </tr> <tr> <td>Sign-in Passcode</td> <td style="text-align: right;">(20×6=120 Pts)</td> </tr> <tr> <td>Final Exam</td> <td style="text-align: right;">(50 Pts)</td> </tr> </table>			Assignments	(10 Pts×5=50 Pts)	Online Discussion	(10 Pts×8=80 Pts)	Sign-in Passcode	(20×6=120 Pts)	Final Exam	(50 Pts)
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Sign-In Passcode

- Put Your Name Here _____
- It is your responsibility to get my sign-in passcode on this sheet **BEFORE** each class meeting starts
- Please return this sheet to me in our last class meeting to receive your attendance credits

Week 1 Jan 22/24	
Week 2 Jan 29/31	
Week 6 Feb 26/28	
Week 8 March 12/14	
Week 14 April 23/25	
Week 15 April 30/May 2	