ELED/BED 4310
Teaching Math in Elementary School/Bilingual Classroom
Fall 2020 Syllabus

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

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

Course Description

This course covers the methods and resources for teaching mathematics in the elementary grades. Emphasis is placed on the equity principle (mathematics for all) and the development of conceptual understanding on topics such as number sense, patterns, and basic algebra, geometry and measurement, data analysis and probability. Students will design, implement, assess and critique mathematics instruction, with an emphasis on effectively engaging emergent bilingual students (English Language Learners). 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/Materals

- Van de Walle, J., Karp, A., Bay-Williams, J. (2009). *Elementary and Middle school mathematics: Teaching developmentally (7th ed.) Texas Edition*. Boston, MA: Pearson.
- Please prepare **color papers, color markers, a pair of scissors, and a smart phone/camera that can take and upload photos.** We will do a lot of drawings as well as cut and paste activities for demonstrating mathematical concepts. You need to use your cellphone to take photos of your products and share them with the whole class.

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).

Student Conduct and Discipline: All students are expected and required to obey the law and to comply with Regent, Rules, and Regulations (http://www.utsystem.edu/bor/rules) with system and University rules, with directives issued by an administrative official in the course of his or her authorized duties and to observe the standards of conduct appropriate for the university.

Equal Opportunity: All students regardless of gender, age, class, race, religion, physical disability, sexual orientation, etc., shall have equal opportunity without harassment in this course. Any problems with or questions related to this can be discussed confidentially with the instructor.

Technical Assistance

If you have technical problems with the course, please contact the UTEP Helpdesk: M - F: 7AM - 8PM, Sat: 9AM - 1PM, Sundays 11-4 pm.

On campus phone: 915.747.5257

Off campus: 915.747.4357

If you are on campus, you may also visit the ATLAS lab located within the Undergraduate Learning Center (UGLC building) or the Technology Support Center in Room 300, Library.

Policy on Academic Dishonesty

The University of Texas at El Paso prides itself on its standards of academic excellence. In all matters of intellectual pursuit, UTEP faculty and students must strive to achieve based on the quality of work produced by their individual. In the classroom and in all other academic activities, 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. It is imperative, therefore, that all faculty, insist on adherence to these standards.

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, and 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 Special Needs

The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protections for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides a reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please notify your instructor and contact Disabled Student Services (DSSO) at 747- 5148 or at dss@utep.edu or come by Room 106 Union East Building.

Online Etiquette Guideline

As a member of the learning community of this class, the following is a list of specific expectations (Note that this list is not exhaustive and that it may be added to as needed throughout the semester):

You are expected to actively engage in the learning community of this class.

This includes: completing the coursework tasks as outlined in each week's session, actively contributing to discussions, seeking guidance if you have questions (note that if you have a question, it is likely that everyone will benefit if ask your question) and exhibiting professional courtesy during interactions with classmates/ your instructor. Class participation includes, but is not limited to: engaging in in-class activities and writing, volunteering inputs in class discussions, answering questions, defending personal viewpoints, and presenting completed assignments to your classmates.

You are expected to exhibit appropriate behavior for a higher learning environment.

Even though we will not meet face-to-face, logging on to our online course site is the equivalent of walking on to the UTEP campus. Therefore, the rules of conduct that apply on campus also apply in our course site. Our course site is a place to engage in social learning; it is meant to be a safe space for all. Our ideas and beliefs shape who we are, and will differ from our peers;

sharing these within class allows us to learn different perspectives and points of view, but this can only happen successfully if everyone in our learning community is respectful of individual ideas. You are encouraged to participate in all activities to the fullest extent possible, with an open mind to new experiences. In particular, the following are general guidelines for online interactions:

- All the information discussed between peers and/or with your instructor should be kept confidential, thus providing a safe atmosphere for creative expression, free of judgment.
- You are encouraged to participate to the depth that you feel comfortable sharing with the class (Note: An electronic record will remain, so be thoughtful in how much personal information you share. The general rule is: share only that which you would be comfortable seeing printed in a newspaper/ public Internet page.).
- Do not use inappropriate language, all capital letters, or language short cuts (i.e. texting shorthand). Online entries should reflect academic writing standards, with edited spelling, grammar, and punctuation.
- When reacting to someone else's message, whether in agreement or disagreement, please address the ideas, not the person. (Note: Harassing, flaming and/or inappropriate postings will not be tolerated.)
- Be sure to read everyone's responses before posting. Avoid repetition of what someone else has already said. Add something new to the discussion!
- Please refrain from posting yes/no or I agree/disagree answers (this will NOT earn you participation points). The point of our online interactions is to create a rich and meaningful sharing of ideas; therefore, posts should: justify positions, provide specific examples, and demonstrate that you have read the required readings and your classmates' comments carefully and thoughtfully.

You are expected to exhibit high level time management skills and turn your work in ON TIME.

As previously mentioned, this is a fast-paced, intensive course that requires you to devote significant time to complete the required readings, discussions and various additional assignments that are due each week. Although there is no mandatory time that you must be online, the research shows that those with the best success in online courses create a set schedule for coursework and stick to it (whether you do your work at 3am or 10am on whatever day does not matter, what matters is just that you allow a sufficient, set time each week of the semester to focus on coursework). Timely completion of all coursework is essential for this class to run smoothly (i.e. your classmates rely on you to do your readings early in the week and contribute to the discussion on time in order for them to be able to post feedback later in the week). Therefore, late work will NOT be accepted. All online assignments are due by the due date and time listed in the task directions (see each weekly session in our course site for specific details). Please ensure that you carefully read all instructions for each assignment, particularly the due dates and times, and then schedule the time you devote to this class accordingly.

Note: Exceptions may be made in the case of *extreme emergency* with supporting documentation. I will not accept ANY late coursework after one week from the originally scheduled due date during the semester or after the last scheduled coursework due date at the end of the semester. If you anticipate your assignment will be late due to unusual circumstances, please contact me and explain your situation prior to the due date of the assignment. Without prior notice, late assignments will NOT receive any credit.

If BlackBoard is down and you cannot get into our course site to post work by the required due date: ALL coursework should be posted in our online course site. If you find that you are unable to log into Blackboard to access our course site at the time that you are trying to post your work by the due date, you must email me (through regular e-mail at saan@utep.edu) IMMEDIATELY WITH AN ATTACHMENT OF YOUR WORK. When you do this, I will know that you have completed the work in a timely manner and it will be accepted, even though it was not posted in our

course site as is generally required. I will then check with the Technology staff at UTEP to determine when Blackboard was out. If you email me indicating that you did not post your coursework because Blackboard is down, but you do not send me your work as an attachment in the message, you will not receive credit for your work.

You work is expected to be your own.
Everything you turn in for this course must be your own work. The purpose of coursework is to know what *you* think, not how clever you are at getting around the rules…. so use your brilliance in a productive way. Any student caught engaging in instances of cheating, plagiarism or any other form of academic misconduct WILL be referred to the Dean of Students Office for disciplinary action. Students may be suspended or expelled from UTEP for such actions. It's serious! Don't do it.

You are expected to contact me for help if needed throughout the semester.
I will have virtual office hours on Mondays from 2-4pm MT. You can email me for a quick response or email me to set up a phone consultation during this time. My email is saan@utep.edu. Please include your first and last name and the title of the course you are taking with me in the body of your message. Outside of my virtual office hours, you can expect a response from me with 24-48 hours (usually sooner) for any email communication you send.

If at any time, you have difficulty understanding my expectations or the course material or completing course work for any reason—BE PROACTIVE!!! I am here for you (email, phone, or in person). I *strongly* encourage you to reach out to me as soon as possible (do not wait until the day before something is due or the end of the semester) and we will work together to make this class a success for you!

Course Structure and Assignments

This course runs on a weekly schedule, Monday through Sunday. Detailed instructions for all of the coursework tasks to be completed each week of the semester are arranged by class session (i.e. each class session covers one week of the semester). The class sessions for each week are labeled by week number and start date in the main left-hand navigation in our course site. In each of the weekly class sessions, you will find: the topic(s) and objectives for the week, the required reading (from the textbook and via embedded links to download/access articles/videos), a summary of what tasks are due (and when) that week and detailed directions and related links for completing and posting your coursework that is due for that class session (i.e. during that week). **All weekly tasks MUST be submitted by the given deadline; course work is ALWAY due by midnight MT on the day indicated in the task directions.**

The following is a summary overview of the required coursework for the entire semester and related points possible. For *detailed instructions*, you should access the weekly class sessions in our online course site.

Online Learning Modules in the Blackboard

Each week you will participate an online learning module about strategies of teaching mathematics. The learning module in each week has two discuss sections:

Hands-On Activity (10 Points × 14)
Due every Thursday of the week

You will make the mathematics manipulatives based on the given instruction, and to complete the activity tasks. You will take photos of your weekly hands-on activity and post them together with some of your descriptions of the teaching/learning process (no less than 200 words) on the discussion forum in the Blackboard. Please type directly in the dialogue box and insert the photos directly into the dialogue box. Do not use attachment.

Pedagogical Development (10 Points × 14)
Due every Sunday of the week

You will post your answers to each tasks (no less than 300 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. Do not use attachment.

Analysis of Lesson Video (14 points × 3)
Due Sep 27, Nov 1, & Dec 6

As a part of your field experiences, you will observe three lesson videos. You will analyze the effectiveness of target teachers' implementation of this lesson plan using the a*ctive 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 collect evidences on the following evaluation areas:

a. The lesson allowed students to communicate with each other
b. The lesson allowed students to communicate with teacher
c. Students had chance to show their ideas/works to the class
d. The lesson connected the target math topic with other math concepts
e. The lesson connected the target math topic with other school subjects
f. The lesson connected the target math topic to real world
g. The lesson design appropriates for students' age/grade
h. The lesson matches curriculum standards
i. The lesson minimized the time when students are not in activity/teacher is not teaching
j. In the lesson, topics and activities built on each other from start to end of lesson
k. The lesson utilized more than one instructional approach (i.e. whole class, small group work, etc)
l. The teacher provided differentiated instruction (different activities depending on student's ability)
m. In the lesson, students have opportunities to apply the target math concepts
n. The lesson provided students opportunities for self-directed learning
o. The lesson provided opportunities for students to engage in reflection of their own work or learning
p. The teacher used different methods to assess student understanding of content/skills
q. The teacher used assessment (to make decisions for teaching)

Lesson Plan Development (14 points × 3)

Due Sep 27, Nov 1, & Dec 6

In this class, you will develop THREE sets of 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).

Final Projects—36 Points

In this project, you will develop a two-week (10 working days) curriculum for a mathematics summer camp for a school district for a specific grade level from K-5. Your lessons should be detail enough so that other teachers can replicate your lesson. You can consider to link mathematics to Science (e.g. physics, chemistry, biology, and space and environmental science), Arts (e.g. visual arts, music, and dancing), Social Studies (political science, history, economics, religious studies, geography, psychology, and anthropology) as well as Language Arts and/or Literacy.

General Calendar

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

Date & Location	Class Topics/Activities		Reading
Week 1 (Starts 8/24)	**Module 1**	Overview	*Chapter 1-2*
Week 2 (Starts 8/31)		Problem Solving	*Chapter 4-5*
Week 3 (Starts 9/7)		Number Concepts	*Chapter 8*
Week 4 (Starts 9/14)		Number Operations I	*Chapter 9*
Week 5 (Starts 9/21)		Number Operations II	*Chapter 10-11*
Week 6 (Starts 9/28)	**Module 2**	Geometry & Measurement I	*Chapter 20*
Week 7 (Starts 10/5)		Geometry & Measurement II	*Chapter 19*
Week 8 (Starts 10/12)		Geometry & Measurement III	*Chapter 3*
Week 9 (Starts 10/19)		Algebra I	*Chapter 13*
Week 10 (Starts 10/26)		Algebra II	*Chapter 23*
Week 11 (Starts 11/2)	**Module 3**	Data Analysis	*Chapter 21*
Week 12 (Starts 11/9)		Probability	*Chapter 22*
Week 13 (Starts 11/16)		Fractions	*Chapter 15-16*
Week 14 (Starts 11/23)		*Thanksgiving (No Class)*	*Chapter 7*
Week 15 (Starts 11/30)		Ratio & Proportion	*Chapter 18*
Week 16 (Starts 12/7)	**Final Project**		
Total 400 Pts	Analysis of Lesson Video Hand (14 Pts×3=42 Pts) Lesson Plan Development (14 Pts×3=42 Pts) Activities (10 Pts×14=140 Pts) Pedagogy Development (10Pts×14=140 Pts) Final Projects (36 Pts)		
Grade Distribution:	**A** 90% - 100 % of point total **C** 70% - 79.9 % of point total	**B** 80% - 89.9% of point total **D** 60% - 69.9% of point total	

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 developm ent 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.