Class Location: Matthews 108
Class Dates and Times: Thursday, 12:00 – 2:50 p.m.
Office Hours: Tuesdays & Thursdays, 9:00 a.m. – 12:00 p.m., or by appointment
Instructor: Sarah Smitherman Pratt, Ph.D.
    Office: Matthews 204-M
    Phone: 940.565.2030 (office); 225.788.4688 (cell)
    E-mail: sarah.pratt@unt.edu (Note: Please allow up to 24 hours for a response.)

Prerequisite: Admission to the teacher education program, which includes participation in a field-based program, EDEE 3320, 3380; all courses in the reading/English/language arts part of the academic major; required core and academic major math courses and DFEC classes.

Course Texts:
National Council of Teachers of Mathematics – Prospective Trial Membership (http://www.nctm.org/resources/sampler/)
    ➢ Sign up for student membership by end of course for $39
    ➢ Teaching Children Mathematics is a useful reference for this course. This journal series from NCTM is located in the library and also available on-line.

TK20 Requirement
This course requires an assignment that will be uploaded and graded in the UNT TK20 Assessment System. This will require the one-time purchase of tk20. Student subscriptions will be effective for seven years from the date of purchase. Key assignments must be uploaded into tk20 for instructors to assess. Please go to the following link for directions on how to purchase tk20.
http://www.coe.unt.edu/tk20

Electronic Resources:
National Council of Teachers of Mathematics: www.nctm.org
Course library link: http://www.library.unt.edu/research-tools/class-pages/edee-4350-mathematics-in-grades-ec-8/
Math TEKS: http://www.tea.state.tx.us/rules/tac/chapter111/index.html
Access to Blackboard – required: https://learn.unt.edu
Bloom’s Taxonomy: http://en.wikipedia.org/wiki/Bloom's_Taxonomy

Course Description: Principles in mathematics teaching and learning based on national curriculum, and assessment standards. The learning process in the development of mathematical thinking and skills in children. Students observe mathematics instruction and materials in real settings and experience firsthand the scope and sequence of mathematics in a primary/elementary/middle school setting. Assignments, directed field experience and other class activities take place on site in a school setting.
**Course Goals:** This course is designed to develop reflective teaching practices in mathematics. The student will be exposed to a wide range of issues and theories in mathematics curriculum, and encouraged to relate these to his/her own teaching practices. Opportunities for teaching and observation of teaching will be provided in order to analyze and reflect on teaching practices in mathematics. The course encourages students to make meaningful connections between theory and practice through a variety of experiences.

**Course Objectives: (Alignment with UNT Conceptual Framework & INTASC Standards)**

1. To introduce the pre-service teachers to current perspectives in elementary & middle level mathematics curriculum. (Professionism; INTASC 9&10)
2. To have pre-service teachers begin reflection on the practices of teaching that have influenced them as well as the influences of their practices on students. (Communication & Professionalism; INTASC 4, 5, 6, 9, & 10)
3. To develop appropriate assessment techniques that informs instructional practice and support student learning. (Content, Diversity, Equity, Pedagogy; INTASC 1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
4. To engender skills of effectively implementing elementary & middle level mathematics curriculum. (Content; Equity, & Pedagogy; INTASC 1, 4, 5, 6, 7, 8, 9, 10)
5. To acquaint pre-service teachers with various types of manipulatives and other concrete materials available for modeling and developing concepts in elementary & middle level mathematics. (Pedagogy; INTASC 1, 4, 5, 6, 7, 8)
6. To develop facility with a variety of calculator and computer applications appropriate for the elementary & middle level mathematics classroom. (Content & Pedagogy; INTASC 1, 4, 5, 6, 7, 8)
7. To introduce pre-service teachers to a variety of teaching approaches for elementary & middle level school mathematics. (Pedagogy; INTASC 1, 4, 5, 6, 7, 8)
8. To become acquainted with mathematics in a broader cultural context. (Diversity; INTASC 2 & 3)

**Content and Methodology**

The content of the class integrates recent research and theories to investigate the nature of and how students in grades EC-8 learn mathematics. The strategies for teaching mathematics developmentally will be modeled. Candidates will become familiar with planning and teaching mathematics by actively engaging in the developmental process.

**Proficiencies for Teachers in Learner-Centered Schools and Course Objectives:**

1. **Learner-Centered Knowledge** – The teacher possesses and draws on a rich knowledge base of content, pedagogy, and technology to provide relevant and meaningful learning experiences for all students. Candidates will communicate knowledge of the NCTM (2000) Principles and Standards for Grades PK-8. Explore ways to facilitate learners' construction of their own knowledge of mathematics. Engage in strategies and techniques for teaching the mathematical topics of numbers, computation, patterns, functions, statistics, probability, geometry, measurement and fundamental concepts of algebra.

2. **Learner-Centered Instruction** – To create a learner-centered community, the teacher collaboratively identifies needs; and plans, implements, and assesses instruction using technology and other resources. Candidates will analyze the practice of effectively teaching mathematics through the following four categories: selecting worthwhile mathematical tasks; using a variety of tools including calculators, computers, physical and pictorial models to enhance discourse; creating a learning environment; and assessing teaching and learning. Candidates will design and implement instruction and assess effectiveness during field experiences.

3. **Equity in Excellence for All Learners** – The teacher responds appropriately to diverse groups of learners. Candidates will explore the range of ways that diverse students at this age level learn...
mathematics. Observe during field experiences the NCTM vision that all students can learn to think mathematically as lessons are designed and implemented for a diverse group of students.

4. Learner-Centered Communication - While acting as an advocate for all students and the school, the teacher demonstrates effective professional and interpersonal communication skills. Candidates will communicate mathematically in written and oral form during class and field experiences. Candidates will communicate and demonstrate a positive attitude toward students and mathematics.

5. Learner-Centered Professional Development - The teacher, as a reflective practitioner dedicated to all students' success demonstrates a commitment to learn, to improve the profession, and to maintain professional ethics and personal integrity. Candidates will collaborate with teachers and peers in planning, teaching, and assessing lessons for students during field experiences. Analyze and evaluate the appropriateness and effectiveness of their teaching. Research, discuss, and reflect on practices and ideas in professional publications.

TEXES STANDARDS
Mathematics Generalist EC-6: http://www.tea.state.tx.us/index2.aspx?id=6066&menu_id=2147483671&menu_id2=794
Mathematics 4-8: http://www.tea.state.tx.us/index2.aspx?id=5938

Standard I. Number Concepts: The mathematics teacher understands and uses numbers, number systems and 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.

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.

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.

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.

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.

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.

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.
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.

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.

TEXES Pedagogy and Professional Responsibilities Standards
Standard I. The teacher designs instruction appropriate for all students that reflects an understanding of relevant content and is based on continuous and appropriate assessment.
Standard II. The teacher creates a classroom environment of respect and rapport that fosters a positive climate for learning, equity and excellence.
Standard III. The teacher promotes student learning by providing responsive instruction that makes use of effective communication techniques, instructional strategies that actively engage students in the learning process and timely, high-quality feedback.
Standard IV. The teacher fulfills professional roles and responsibilities and adheres to legal and ethical requirements of the profession.

TEKS for Fine Arts, Elementary EC-6
Standard I. The art teacher understands how ideas for creating art are developed and organized from the perception of self, others, and natural and human-made environments. (in Visual Arts, Music)
Standard II. The art teacher understands the skills and techniques needed for personal and creative expression through the creation of original works of art in a wide variety of media and helps students develop those skills and techniques. (in Visual Arts, Music)
Standard III. The art teacher understands and promotes students’ appreciation of art histories and diverse cultures. (in Visual Arts)
Standard IV. The art teacher understands and conveys the skills necessary for analyzing, interpreting, and evaluating works of art and is able to help students make informed judgments about personal artworks and those of others. (in Visual Arts)

COURSE ASSIGNMENTS & EVALUATION

1. Weekly Engagement ............................................7%
2. Pi Day Project ....................................................3%
3. Observation Project ............................................20%
4. Child Interaction/Tutoring Project .......................25%
5. Reading Responses ............................................25%
6. Interdisciplinary Unit Plan ...................................20%

A = 90-100%  B = 80-89%  C = 70-79%  D = 60-69%  F = 0-59%
All course assignments are due at the beginning of class except where indicated in the syllabus.
Electronic assignments must be submitted via Blackboard.

Weekly Engagement:
To be effectively engaged in this class you will need to:
1) Be prepared by reading and reflecting on assigned material each week.
2) Show involvement in class through participation in class discussion.
3) Demonstrate purposeful engagement with activities during class time.

4) Reflect honestly after each class to the following two questions:
   1. Describe your work in problem solving today and how you feel about it;
   2. What does your work tell you about teaching mathematics?

Each pre-service teacher will maintain a notebook in which mathematical activities, pedagogical ideas, connections across curricula, and reflections are recorded. Each class will conclude with the pre-service teacher reflecting on the class activities and conversations. Notebooks will be checked in class periodically.

Grades for participation and personal responses will be assessed each week, according to attendance and lab notebooks. The grading rubric for class participation is:
   - 2 points for participating in the classroom discussions and activities, and for recording in the lab notebook;
   - 1 point for leaving class early and/or arriving late (more than 15 minutes), for not fully participating in the discussions and activities, or for not recording in the lab notebook;
   - 0 points for no participation and for no personal response recorded.

In this course it is impossible to be engaged in quality learning without taking these components seriously. Poor or late attendance, not attending for the full class time, or lack of preparation (i.e., not completing reading assignments or other non-graded assignments) will adversely affect your grade for this course. It is expected that students will refrain from scheduling any appointments during class time. You are expected to attend and actively participate in all class sessions, as your contributions are invaluable to the learning of all class members. You are expected to submit all assignments on time, to arrive on time to each class, and to come to class prepared. If you miss more than 30 minutes of a class, you will be counted as absent. Whether you have an excused or unexcused absence, you are still missing important components to the course. You are responsible for material covered during absences.
   - 2 absences = final grade in the course will be lowered by one full letter grade
   - 3 absences = final grade in the course will be lowered by two full letter grades
   - 4 absences = F in the course
   - 3 tardies = 1 absence, this means arriving to class late and/or leaving class early

Pi Day Project:
You will create a mathematics or science game that is grade/subject specific, based on the expectations in the TEKS. The games will be presented on March 15 during class time. Part I Preparation; Part II Plan of Action; Part III Implementation; and, Part IV Reflection. See Blackboard for rubric and due dates.

Observation Project:
Each pre-service teacher will observe mathematics being taught for three (3) sessions while completing distinct observation sheets (to be distributed). Using the data from the observation sheets, each pre-service teacher is expected to submit a comparison paper across observations, readings, and this course. The paper should be 4-5 pages in length, 12 font, double-spaced, free of typos and grammatical mistakes, and well-constructed. See Blackboard for rubric and due dates for the observations (to be checked in class) and the report. When the observation report is due on Blackboard, the three observation sheets must be brought to class to receive credit.

Child Interaction/Tutoring Project:
Beginning the third week of class each pre-service teacher will spend approximately 30 minutes each alternate week interacting with one child (EC-8, based on your area of certification) in or out of a school environment for three interactions, then change to a different child for three interactions, combining for
a total of six interactions to be completed over the course of the semester. The interaction is to be focused on some mathematical activity. What you do will depend on various factors: the age of the child, her/his mathematical development, his/her interests. Much of what you do will probably (but not necessarily) relate to what the child is doing in her/his classroom in mathematics. At the completion of each session you are to write-up your experiences from the session. See Blackboard for rubric and due dates for when the interactions will be checked in class and when the reflection paper and all interactions are due to be uploaded to TK20 to receive credit.

Reading Responses:
Each week you are expected to post a one paragraph response that addresses ALL of the readings assigned and addresses the prompt. Each response must include at least one quote from one of the provided articles, and it is to be submitted electronically on Blackboard Discussion Board by 8:00 a.m. the day of class. Any posts after deadline will not be accepted. These reading responses are graded on a 3-point rubric as follows:

- 3 – 1) Response addresses the prompt with references to the readings for the week, and when appropriate, earlier readings; 2) Opinions, observations, and/or past experiences are thoughtfully related to the readings throughout the response; 3) At least one quote from the readings is provided and connects directly to response. Overall, it is clear that you have read the assignment and understand the main idea conveyed.
- 2 – One of the following is not addressed: – 1) Response addresses the prompt with references to the readings for the week, and when appropriate, earlier readings; 2) Opinions, observations, and/or past experiences are thoughtfully related to the readings throughout the response; 3) At least one quote from the readings is provided and connects directly to response. Overall, you may have fully read the assignment and may understand the main idea conveyed.
- 1 – Two of the following are not addressed: – 1) Response addresses the prompt with references to the readings for the week, and when appropriate, earlier readings; 2) Opinions, observations, and/or past experiences are thoughtfully related to the readings throughout the response; 3) At least one quote from the readings is provided and connects directly to response. It is not clear that you read the assignment or understand the main idea conveyed.
- 0 – No response is submitted.

Interdisciplinary Unit Plan:
Create a unit of study for a specific grade level that includes a mathematical concept across all lessons and connects thematically to other subjects. The unit should encompass a week’s worth of lessons. Each pre-service teacher will submit an overview of the week’s lessons, and for credit in this course submit detailed lesson plans for teaching mathematics for the week. Pre-service teachers will compose drafts of these lesson plans for feedback from peers and the instructor before the final unit is due. The final unit plan with supporting documents must be uploaded on Blackboard. See Blackboard for due date and rubric. All members of the class will be able to access the units for viewing and sharing.

Texas Essential Knowledge and Skills (TEKS)
Class activities, readings (van de Walle text & supplemental articles), and discussions address the TEKS mathematics standards for grades K-8 for

- Number, operation, and quantitative reasoning
- Patterns, relationships, and algebraic thinking
- Geometry and spatial reasoning
- Measurement
- Probability and statistics
- Underlying processes and mathematical tools
The Educator as Agent of Engaged Learning

Improving the quality of education in Texas schools and elsewhere is the goal of programs for the education of educators at the University of North Texas. To achieve this goal, programs leading to teacher certification and advanced programs for educators at the University of North Texas 1) emphasize content, curricular, and pedagogical knowledge acquired through research and informed practice of the academic disciplines, 2) incorporate the Texas Teacher Proficiencies for learner centered education, 3) feature collaboration across the university and with schools and other agencies in the design and delivery of programs, and 4) respond to the rapid demographic, social, and technological change in the United States and the world.

The educator as agent of engaged learning summarizes the conceptual framework for UNT's basic and advanced programs. This phrase reflects the directed action that arises from simultaneous commitment to academic knowledge bases and to learner centered practice. "Engaged learning" signifies the deep interaction with worthwhile and appropriate content that occurs for each student in the classrooms of caring and competent educators. "Engaged learning" features the on-going interchange between teacher and student about knowledge and between school and community about what is worth knowing. This conceptual framework recognizes the relationship between UNT and the larger community in promoting the commitment of a diverse citizenry to life-long learning. In our work of developing educators as agents of engaged learning, we value the contributions of professional development schools and other partners and seek collaborations which advance active, meaningful, and continuous learning.

Seeing the engaged learner at the heart of a community that includes educators in various roles, we have chosen to describe each program of educator preparation at UNT with reference to the following key concepts, which are briefly defined below.

1. Content and curricular knowledge refer to the grounding of the educator in content knowledge and knowledge construction and in making meaningful to learners the content of the PreK-16 curriculum.
2. Knowledge of teaching and assessment refers to the ability of the educator to plan, implement, and assess instruction in ways that consistently engage learners or, in advanced programs, to provide leadership for development of programs that promote engagement of learners.
3. Promotion of equity for all learners refers to the skills and attitudes that enable the educator to advocate for all students within the framework of the school program.
4. Encouragement of diversity refers to the ability of the educator to appreciate and affirm formally and informally the various cultural heritages, unique endowments, learning styles, interests, and needs of learners.
5. Professional communication refers to effective interpersonal and professional oral and written communication that includes appropriate applications of information technology.
6. Engaged professional learning refers to the educator's commitment to ethical practice and to continued learning and professional development.

Through the experiences required in each UNT program of study, we expect that basic and advanced students will acquire the knowledge, skills, and dispositions appropriate to the educational role for which they are preparing or in which they are developing expertise.
A broad community stands behind and accepts responsibility for every engaged learner. UNT supports the work of PreK-16 communities through basic and advanced programs for professional educators and by promoting public understanding of issues in education.
Teacher Education & Administration

Departmental Policy Statements

DISABILITIES ACCOMMODATION
“The University of North Texas complies with Section 504 of the 1973 Rehabilitation Act and with the Americans with Disabilities Act of 1990. The University of North Texas provides academic adjustments and auxiliary aids to individuals with disabilities, as defined under the law. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities.” If you believe you have a disability requiring accommodation, please see the instructor and/or contact the Office of Disability Accommodation at 940.565.4323 during the first week of class.

ACADEMIC INTEGRITY
Students are encouraged to become familiar with UNT’s policy on academic integrity: http://policy.unt.edu/sites/default/files/untpolicy/pdf/7-Student_Affairs-Academic_Integrity.pdf
Academic dishonesty, in the form of plagiarism, cheating, or fabrication, will not be tolerated in this class. Any act of academic dishonesty will be reported, and a penalty determined, which may be probation, suspension, or expulsion from the university.

STUDENT CONDUCT
Expectations for behavior in this class accord with the Code of Student Conduct: “Student behavior that interferes with an instructor’s ability to conduct a class or other students’ opportunity to learn is unacceptable and disruptive and will not be tolerated in any instruction forum at UNT. Students engaging in unacceptable behavior* will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student’s conduct violated the Code of Student conduct. The university’s expectations for student conduct apply to all instructional forums, including university and electronic classrooms, labs, discussion groups, field trips, etc.” See http://www.unt.edu/csrr/

ETHICAL BEHAVIOR AND CODE OF ETHICS
The Teacher Education & Administration Department expects that its students will abide by the Code of Ethics and Standard Practices for Texas Educators (Chapter 247 of the Texas Administrative Code www.sbce.state.tx.us) and as outlined in Domain IV: Fulfilling Professional Roles and Responsibilities of the Pedagogy and Professional Responsibilities (PPR) Texas Examination of Educator Standards (TExES); and as also addressed in codes of ethics adopted by professionals in the education field such as the National Education Association (NEA) and the American Federation of Teachers (AFT).

COLLECTION OF STUDENT WORK SAMPLES POLICY
In order to monitor students’ achievement and improve its instructional programs, the Department of Teacher Education and Administration collects random, anonymous student work samples to be analyzed by internal and external reviewers.

COMPREHENSIVE ARTS PROGRAM POLICY
The Elementary Education program area supports a comprehensive arts program to assist pre-service and in-service teachers to design and implement curricular and instructional activities which infuse all areas of the arts (visual, music, theater, and movement) throughout the elementary and middle school curriculum.

EAGLE CONNECT
All students should activate and regularly check their Eagle Connect (e-mail) account. Eagle Connect is used for official communication from the University to students. For information about Eagle Connect, visit https://eagleconnect.unt.edu/.

NATIONAL COUNCIL FOR THE ACCREDITATION OF TEACHER EDUCATION (NCATE)

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UNT is an NCATE-accredited institution. The educator as an agent of engaged learning” summarizes the conceptual framework of UNT’s basic and advanced programs. The program of educator preparation at UNT is based on the following key concepts: (1) content and curricular knowledge, (2) knowledge of teaching and assessment, (3) promotion of equity for all learners, (4) encouragement of diversity, (5) professional communication, and (6) engaged professional learning.

TECHNOLOGY INTEGRATION POLICY
The Elementary Education program area supports technology integration to assist pre-service and in-service teachers to design and implement curricular and instruction activities which infuse technology throughout the elementary and middle school curriculum.

All students must purchase access to TK20 for assessment purposes for other courses. Please go to the following link for directions on how to purchase TK20. Announcements regarding training on use of the TK20 system will also be posted on this website. http://www.coe.unt.edu/tk20

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