NORTHEASTERN
STATE UNIVERSITY

College of Science and Health Professions
Department of Mathematics and Computer Science
Spring 2017

MATH 3813, (CRN 20088), 3 Credits, Topics in Mathematics: Mathematics Tutoring Grades 6-12

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Office Location: Broken Arrow – Science Building [BASC 221]

Office Hours:	Monday	1:00 – 2:00 p.m.
	Tuesday	12:30 – 2:30; 4:00 – 4:30 in Math Clinic
	Wednesday	Available by Appointment in BASC #221
	Thursday	Available by Appointment in BASC #221
	Friday	Available by Appointment in BASC #221

Course Delivery Mode: Blended with 1 Contact Hour per Week (This course will be a hybrid course. Teacher Education Candidates will spend 60 minutes in class once per week for sixteen weeks.)

Class Days / Times: Tuesdays 4:30 – 5:30

Course Prerequisites and/or Co-requisites: Permission by Instructor. This course is directed toward the secondary mathematics education major.

Course Description: MATH 3813 is a course deeply rooted in service learning theory and practice in support of civic engagement. Based on the philosophy that not all learning resides within the walls of the university and framed by the P-A-R-C Model for Service Learning, this course will be portioned into three sections.

The first part of the course will consist of classroom instruction regarding best teaching practices for tutoring grades 6 – 12 students. The second part of the course will consist of tutoring mathematics students in the Mathematics Clinic on the NSU-BA campus. The final part of the

course will be a reflection/ debriefing session among the teacher candidates and professor.

Course Purpose / Goals: The purpose of this course is to provide undergraduate students with an experiential based learning opportunity in which knowledge of both mathematics content and pedagogy can be applied in an authentic teaching and service learning setting.

Collaborative Partnerships:

> **Academic Partners:** College of Science and Health Professions and College of Education (Departments of Mathematics and Curriculum and Instruction)

> **Community Partners:**   Students, Families, Teachers and Administrators of Northeastern Oklahoma Elementary, Middle and High Schools (Home School, Public and Private Institutions)

Course Design: Evidence of deeply engaged, high quality work is linked to the process of service learning that will frame this course and the clinic experience. Guided by the P-A-R-C Model (Wade, 1997), teacher candidates are involved in every phase of the service learning experience.

> •**Preparation Phase of Service Learning Process**: The first part of the course consists of classroom instruction regarding best teaching practices for tutoring mathematics students in grades 1 – 12. NSU students make contact with their future student and parent/ guardian to determine the areas of mathematics which will need remediation or enrichment. NSU students remain deeply engaged in every component of the service learning experience.

> •**Action/ Engagement Phase of Service Learning Process**: The second part of the course consists of tutoring mathematics students in the Mathematics Clinic on the NSU-Broken Arrow campus one hour a week for the duration of the semester.

> •**Reflection Phase of Service Learning Process**: The third part of the course will be routine and on-going reflection about the service experience with teacher education candidates and the instructor. Technology available through Blackboard services will serve as one vehicle by which the reflection process will occur. Reflection will also be a part of the student-led, parent-teacher conference that will take place on the last night of the tutoring semester.

> •**Celebration Phase of Service Learning Process/ Public Dissemination**: The final part of this service experience will be the celebration phase and sustainable opportunity to disseminate information about the servicing. An end of semester reception with invited guests [students, parents, principals, pre-service teachers, and university administrators] will provide the opportunity to celebrate both teaching and academic gains in mathematics. During the reception program, teacher candidates will individually recognize their students through the presentation of unique mathematics awards. Through reflection, conversation, district media, social media, and written dissemination of the reciprocal service arrangement, our community and our partners remain informed about what we do. Public dissemination is in part the rationale for such a lengthy wait list in our clinic each semester.

Service-Learning Standards for Quality Practice (NYLC, 2009):

•**Meaningful Service** — The NSU Mathematics Clinic actively engages NSU pre-service teachers in meaningful and personally relevant service. They touch the lives of students and parents each week by helping each child develop more and better mathematics understanding.

•**Link to Curriculum** — Through the NSU Mathematics Clinic, service-learning is intentionally used as an instructional strategy to meet learning goals and content standards. Both mathematics and pedagogical academic objectives drive the service experience. Students have an authentic way to apply what they have learned in their NSU courses to an authentic teaching experience that will grow each teacher candidate's efficacy and better prepare them for the realities of the classroom.

•**Reflection** — Math Clinic teachers are given multiple and diverse opportunities to reflect on their service. They are aware that as they reflect on each teaching session that they are growing as a teacher. Reflection is the key for personal growth and development. They reflect with each other informally and formally through assignments and electronic discussions.

•**Diversity** — Math Clinic teachers work with students from very diverse educational, cultural, and socioeconomic backgrounds. Students from the community come to us from both public and private schools, from many different ethnic groups, and from families both with financial means and without. Teachers learn the importance of valuing differences through their diverse interactions with our students.

•**Voice** — Students have voice from the moment we begin our semester. They have the opportunity to indicate preference for the age of student they most prefer to work with. Some of our teachers repeat the Math Clinic experience and intentionally request the opportunity to work with students of different grade levels for more personal growth opportunity. They are involved especially the first five weeks in the planning, implementing and evaluation the service experience.

•**Partnerships** — Math Clinic partnerships are linked to numerous schools in our area and especially with the families of the students we interact with each week. These partnerships are mutually beneficial as both NSU teacher candidates and the children they serve benefit from the service experience.

•**Progress Monitoring** - Math Clinic teachers make data driven decisions about the tutoring goals they establish unique to each student. They routinely evaluate progress toward those goals at the end of each session. Each teacher writes an assessment report that discusses what they have learned about their student as a result of assessments they have given and include tutoring goals for the semester. A second report, given to the parent at the end of the semester, is a comprehensive look at progress toward those established goals. Parents write to us at the end the semester ablaut the positive gains their children have received while in the Math Clinic.

Duration and Intensity — The duration of the Math Clinic experience is one semester. However, many of our NSU teacher candidates participate in consecutives semesters because they believe in the benefits of the service experience and acknowledge how this clinic teaching opportunity has positively impacted them as future teachers. When a child needs consecutive semesters to support sustained progress, we do our best to make room for that child in the next semester.

Preparation - This service experience has been well thought out so that teacher candidates are well prepared for the tutoring semester. Teacher candidates themselves are part of the preparation which includes topics on service learning, math teaching efficacy, lesson planning, assessment, reflection, and mathematics teaching and learning objectives.

Major Goals for the Course: *We are much more than a homework help session.*

While both volunteerism and service learning are very worthy endeavors, they are not one in the same.   Understanding the difference between service learning and volunteerism enables us to maximize the benefit each has to offer.

Service driven by academic objectives partnered with a sense of reciprocity between the teacher candidate and community partner is what differentiates service learning from volunteerism.   This differentiation is the basis of the following major goals for the course:

1. **Reciprocity:**   Both the NSU pre-service teacher and the community partner [students, families, teachers, and administrators from elementary and middle schools in northeastern Oklahoma] must benefit from the servicing experience.

   •Community partners will benefit from the service through enhanced knowledge of mathematics, whether for remediation or enrichment, which will translate into academic gains in the elementary or middle school mathematics curriculum.

   •NSU pre-service teachers will benefit from the service through authentic, experiential based opportunities to teach students well in advance of the time in which they will enter the profession.   Such experiences will grow and sustain pre-service teachers' levels of mathematics teaching efficacy beliefs which will impact the likelihood that as teachers of mathematics they will stay in the profession thereby decreasing the alarming rate of novice attrition.

2. **Academic Objectives:**   The academic objective(s) linked to the preparation of NSU teacher candidates that drive this service learning experience include but are not limited to,
   •Numeration and Operation
   •Geometry and Measurement
   •Problem Solving
   •Data Analysis and Probability
   •Algebraic Thinking
   • Best Practice Related to Mathematics Teaching and Learning

 Student Learning Outcomes: The successful Teacher Education Candidate will be expected to demonstrate competency with regard to the following objectives:

1. Develop instruction based on the Oklahoma Academic Standards (OASM Standards) (http://ok.gov/sde/oklahoma-academic-standards).

2. **Knowledge and Understanding:**
    •Administer Pre Test(s) to identify areas which need to improve during the tutoring sessions.
    •Use knowledge and understanding from assessment data to plan for meaningful leaning opportunities unique to the student so that conceptual understanding of mathematics will be fostered.
    •Blend service with learning; enjoy shared benefits and a spirit of reciprocity between the student and community partner.

2. **Intellectual Skills:**
    •Distinguish between appropriate and inappropriate age and grade appropriate lesson topics
    •Identify connections between mathematics skill sets and service with community partner

3. **Discipline Specific Skills:**
    •Diagnosing strengths and weaknesses of PK-12 students related to number and operation, algebraic thinking, geometry and measurement, data analysis and probability.
    •Utilize knowledge of modeling to remediate weaknesses or provide enrichment of PK-12 students related to number and operation, algebraic thinking, geometry and measurement, data analysis and probability.

Instructional Methods / Strategies: The expected course outcomes will be realized through a variety of instructional methods. Those strategies include, but are not limited to, the following: lecture, expository-discussion, demonstration, and collaborative group activities. The instructor will implement appropriate multi-media technology.

Learning Outcome Assessment Methods: Evaluation of student performance will be based upon homework, three unit exams, and a comprehensive final exam. Students will earn points throughout the semester, and final grades will be determined by total point accumulation. Total possible points may be accumulated in the following manner:

Blackboard Discussions	[3 @ 25 Points]	75 Points
"Getting to Know You" Activity Idea		20 Points
Portfolio:		
●Tutor Profile [1 Page]		20 Points
●Parent Phone Questionnaire [1 Page]		20 Points
●Math Activity #1 [For tutoring session #1]		35 Points
●Math Activity #2 [For tutoring session #2.]		35 Points

●Assessments – Formative Assessment Probe   25 Points
[Formative Assessment Probe- Submit a copy
of the student response and a one-page reflection
using template from Dr. Parrott.]
●Lesson Plans and Reflections [9 @ 40 Points]   360 Points
        [No lesson plan must be submitted for
         lessons #1, #2, #10 but you earn points
        for lesson #1, #2 and the conference on session #10.]
●Report #1: Assessment Report/ Analysis of Data
        [About 3 Pages]   50 Points
●Report #2: Parent Tutoring Progress Report
        [About 6 Pages]   50 Points
●Conduct Student Led Conference   25 Points
[Insert Parent Response Sheet if Provided by Parent]
●MTEBI – Pre and Post for your reference
                                    Total 715 Points

Grading Policy for the College of Science and Health Professions:

90 % - 100%	A	643 – 715 points
80% - 89%	B	572 – 642 points
70% - 79%	C	500 – 571 points
60% - 69%	D	427 – 499 points
Below 60 %	F	0 – 426 points

Detailed Description of Assessment Methods and Related Policies: All due dates are listed on the course calendar located at the end of the syllabus.

1. **Assessment and Teaching Goals**:   NSU Tutors will administer, analyze, and summarize assessment data collected during the first two tutoring sessions. Example assessments will be discussed in class. Each Math Clinic teacher will also select, administer, and analyze a nationally recognized and research developed formative assessment probe. Selection of the specific probe will be based on parent input of student needs. Using this assessment data as a guide, the teacher will establish 3 goals for the tutoring semester and write lesson plans that are designed to address the student's strengths and weaknesses.

2. **Lesson Plans and Reflections [Service Learning Implications]**: NSU Tutors will write an abbreviated lesson plan in advance of each tutorial session.   When the session is complete, a written reflection about each lesson will be required.   Note: At least one lesson should incorporate a literature connection to the mathematics you will be teaching in your tutoring session.   Lesson plans should be available to submit to the professor upon request but may not be collected every week.

3. **Math Activity Design (2)**: Teacher candidates will design, make, and use during the first two sessions two different hands-on activities directed toward the students they will teach. Assignment instructions and rubric will be provided to students. No written

reflection is required although teachers are encouraged to think about what went well and what might be changed in order for each activity to be more effective the next time it is used. **At least one of the two activities will also count as a formative assessment course requirement**.

4. **Blackboard Discussions**: Given that this MATH 3813 is a hybrid course, NSU Math Clinic teachers will be required to participate in 3 Blackboard Discussions related to the tutorial process. Focus questions for these discussions will be prompted by in-class experiences. Blackboard will also be used to distribute course announcements and for grade reporting. You will have one week to participate in the Blackboard Discussion. You may respond to other students but are not required to do so**.**

5. **Parent Communication:** NSU Tutors will be required to communicate routinely with parents and students about progress during the semester long tutorial process. These communications will include, but not necessarily be limited to,
   a. Telephone questionnaire prior to start of tutoring sessions
   b. Notes of encouragement/ praise/ progress during the semester [optional/ encouraged].
   c. Tutoring Progress Report at semester end [which will include information about assessment, activities, and progress]

6. **Portfolio:** NSU Tutors will submit a portfolio at the end of the semester. It should be submitted in a 3 ring binder and organized in the following manner:
   a. Tutor Profile [One Page Document]
   b. Parent Phone Questionnaire [One Page Document]
   c. Copy of Assessment Probe Selected by Clinic Teacher – [Formative Assessment Probe- Submit a copy of the student response and a one-page reflection using template from Dr. Parrott.]
   d. Reports:
      ●Report #1: Assessment Report with Analysis [Approx. 3 – 4 Page Document] – See sample report on Blackboard.
      ●Report #2: Parent Tutoring Progress Report for Parents [Approx. 6 – 8 Page Document - Intended for parents. See sample report on Blackboard. This report **includes and extends** the assessment and analysis report which was submitted early in the semester. The tutoring progress report is written at the end of the semester.]
   e. Lesson Plans and Weekly Reflections [No written lesson plan or reflection required for sessions #1, #2, and #10]
   f. Student led conference materials [Make copies for your portfolio. Provide the parent and student with originals. Include the parent response sheet from conference if it is returned to you.]

Instructional Materials: No Textbook Purchase Required

1. Tutors will check out/ borrow a copy of *Uncovering Student Thinking in Mathematics: Grades 6-12 Formative Assessment Probes for the Elementary Classroom* by Cheryl Rose Tobey and Carolyn Arline by Corwin Press.
2. Tutors will have access to mathematics modeling and teaching materials located in the

NSU- BA Mathematics Clinic.
3. Please use as reference Oklahoma Academic Standards at **http://ok.gov/sde/oklahoma-academic-standards.**

Note: Study Guide for the Oklahoma Subject Area Tests in Advanced Mathematics (#011) http://www.ceoe.nesinc.com/PDFs/OK_011_SG.pdf and for Middle Level Intermediate Mathematics (#025) see http://www.ceoe.nesinc.com/PDFs/OK_025_SG.pdf.

Class and Instructor Policies:

1. **Attendance and Punctuality**: Regular attendance to class is required and is absolutely critical to the success of the tutoring process.   Be aware of the following attendance policies:

    - THREE absences will result in a reduction of ONE grade level for the final grade for the semester. FOUR absences will result in a final grade of "F" because you have missed one quarter of the semester.
    - Three tardies will equal one absence. Please come on time. **Note**: A tardy is defined as arriving more than five minutes after the start of class or coming back from a break.
    - Leaving early three times will equal one absence. Please stay for the duration of the class period. Note: Leaving early is defined as leaving five minutes or less prior to the end of class (leaving earlier than five minutes (e.g. 15 minutes early, staying only through tutoring, etc…) will count as one absence.
    - If an NSU Tutor is absent, the tutoring session(s) must be made up unless a colleague teaches in your place. Please check with Dr. Parrott about how to handle an absence.

2. **Professionalism:** An important part of this course is your demonstrated ability to grow as a professional educator. As such, you are expected to submit work that represents your own best effort. You are responsible for turning in all required assignments in a timely manner. Assignments must conform to university policies governing academic dishonesty. In addition, as a professional educator, you are constantly seen as a model for your students; therefore, it is imperative that you strive to communicate well both orally and in writing.

    Because the class involves work with parents, children, and community members, **professional dress is expected**. This includes NOT wearing jeans, flip-flop shoes, etc… Please discuss any questions regarding professional dress with the instructor.

NSU Teacher Education Conceptual Framework:

The Teacher Education Program at Northeastern State University prepares professional educators to be **teaching scholars, educational leaders, and developers of human potential**.

Educators as Teaching Scholars
Teaching scholars read widely and think deeply about subject matter, teaching, and

research. They reflect critically on their own beliefs and their classroom practice in order to make pedagogical improvements. Teaching scholars use appropriate communication skills, they know how to facilitate authentic learning, and they encourage P-12 students to be critical, creative thinkers, with the ability to be lifelong learners.

Educators as Educational Leaders

Educational leaders believe that all P-12 students are capable of learning and of making educational progress. Educational leaders serve as advocates for children/adolescents and families, they understand the political nature of teaching, and they are able to inspire and motivate others by modeling effective communication skills, professional demeanor and attitudes.

Educators as Developers of Human Potential

Educators who are developers of human potential are committed to the philosophical position that the development of human potential is their fundamental task.

Academic Policies / Required Information

Please go to http://offices.nsuok.edu/academicaffairs/SyllabiInformation.aspx for required information pertaining to:

- Academic Misconduct
- American Disabilities Act Compliance
- Inclement Weather/Disaster Policy
- Release of Confidential Information
- Student Handbook
- Teach Act
- Textbook Information
- Title IX

MATH 3813 Topics in Mathematics: **Mathematics Tutoring Grades** 6-12
Spring 2017 *Tentative* Course Calendar

<u>Date</u>	<u>Objective:</u>
January 10	**Syllabus; Introduction to Tutoring** [Reading Assigned] **Mathematics Teaching Efficacy Beliefs** [MTEBI], Read Example Report #1 and Example Report #2 before January 17 class session.
January 17	**Teaching Ideas/ "Getting to Know You" Ideas** **Service Learning: A Step beyond Volunteerism** **Check out Formative Assessment Probe Text**
January 24	*Lesson Planning/ Reflection/ Assessment* *[No F2F for Elementary Education Teacher Candidates: Work on Lesson Planning and Assessment Probe]*
January 31	*Lesson Planning/ Reflection/ Assessment* *[No F2F for Secondary Math Education Teacher Candidates: Work on Lesson Planning and Assessment Ideas]* *Watch for BB Post of Teacher-Student Assignments Today* *[Make Parent Contact by February 7th using Phone Script]*
February 7	**Preparing for Tutoring Sessions #1 - #2** [Tutor Profile 20 points/ Parent Phone Interview Due 20 points] ***Start Checking Blackboard/ NSU Email weekly for announcements and assignment information.***
February 14	**Tutoring Session #1 – Activity #1 due but no lesson plan is required for session #1. However, you will earn 40 points for teaching session #1. Administer assessments and math activities.**
February 21	**Tutoring Session #2 - Activity #2 due but no lesson plan is required for session #2**. **However, you will earn 40 points for teaching session #2**. **Administer assessments and math activities.** [At the end of session #2, start analyzing your assessment data and develop 3 semester goals to help you plan for your session on February 28th. See goal statement guidelines posted on Blackboard.] Blackboard Discussion #1 Assigned – See Discussion Board for Due Date.
February 28	**Tutoring Session #3** [I'll likely stop by and look at your lesson plan #3 before/ during/ or after tutoring. Turn it in next week with your reflection on session #3.] **Submit formative assessment probe student response and one-page reflection using template by Dr. Parrott –New and Returning Teachers Submit - 25 Points.**

March 7   **Tutoring Session #4**
                               Report #1 Due: Assessment Analysis Report – 50 points
                               [An example is posted to Blackboard]
                               Lesson Plan/Reflection #3 Due by 4:30 p.m.

March 14   **Spring Break ─ Math Clinic Closed**

March 21   **Tutoring Session #5**
                               Lesson Plan/Reflection #4 Due by 4:30 p.m.

March 28   **Tutoring Session #6**
                               Lesson Plan/Reflection #5 Due by 4:30 p.m.
                               Blackboard Discussion #2 Assigned

April 4   **Tutoring Session #7**
                               Submit Lesson Plan/ Reflection #6 – 9 in your portfolio at the end of the
                               semester for grading.

April 11   **Tutoring Session #8**
                               **Report #2: Final Tutoring Progress Report Due– Submit by 4:30 in the
                               clinic**. **An example is posted on Blackboard.**

                               *This final report includes but is not limited to Report #1 that you wrote at
                               the beginning of the semester.   Report #2 extends Report #1 by discussing
                               each of your 3 semester goals and describing what you did to support these
                               goals. This final report will be given to the parent on the last night of the
                               semester. You may use my report which will be on BB under Course
                               Documents as a guide and do have permission to cut/paste directly from my
                               example as long as the information describes your student. Be sure to follow
                               the format with regard to spacing, margins, and headings.*

                               ·Start preparing for student-parent conference today.
                               ·No lesson plan/ reflection submitted today. Submit lessons # 6 – 9 in final
                               portfolio for grading.

April 18   **Tutoring Session #9**
                               ·Continue preparing for student-parent conference today.
                               ·Report #2 - Tutoring Progress Report will likely be returned to you today
                               in order that you may modify as necessary before next week's student-
                               parent conference.
                               ·No lesson plan/ reflection submitted today. Submit lessons # 6 – 9 in final
                               portfolio for grading.

April 25 **Tutoring Session #10**
·Math Clinic teachers are encouraged to complete a post MTEBI and self-score. Please insert into your portfolio binder.
·No Lesson Plan/ Reflection are required in your portfolio for session #10. Submit copies of the student conference material instead.

Schedule for Session #10:
4:30 – 4:45 Tutoring/ Review Session with Student
4:45 – 5:00 Parent-Student-Teacher Conference
5:00 – 5:30 Service Learning Celebration and Reception

·Blackboard Discussion #3 Assigned and due by Thursday, April 27th at 5:00 p.m.

·Portfolios also due no later than Thursday, April 27th at 5:00 p.m. [Refer to Syllabus for Portfolio Order.] You may submit on Tuesday, April 25th.

May 2-6 **Final Exam Week [Math Clinic Closed]**
 Pick up graded portfolios **April 27th, 28th, May 1st or 2nd.** If not picked up by one of these dates, your portfolio will be stored until the fall semester.

NSU Catalog Important Dates – Spring 2017

January 9:	Classes Begin
January 13:	Last Date to Enroll and Add Sixteen Week Classes
January 16:	Martin Luther King Day of Service, no classes
January 23:	Last Date to Drop Sixteen Week Classes and Receive a Refund
March 13-17:	Spring Break, campuses closed
April 7:	Last Day to Withdraw from Sixteen Week Classes with a "W"
April 28:	Last Day to Withdraw from a Single Class or Withdraw from all Sixteen Week Classes
May 1-5:	Finals
May 5:	Semester ENDS

Approved by Academic Council – May 3, 1994
Updated – January 27, 2010
Approved by President's Cabinet – February 23, 2010
Revised Fall 2015

Math Tutoring Lesson Plan

Tutor's Name: _____Student's Name: _____

Tutoring Session # _____ Date: _____ Student's Grade/Course: _____

OAS Mathematics Standard(S): Please state the standard with the appropriate standard code.

MATERIALS:

INSTRUCTIONAL PROCEDURES: Please provide a minimum 3 – 5 sentence response to *each part of the activity entry*. A one-page submission is not appropriate.

      Name of Activity – *Purpose*

      Description –

      Assessment –

      Assessment Notes – (make sure to leave room here for your notes)

      Name of Activity – *Purpose*

      Description –

      Assessment –

      Assessment Notes – (make sure to leave room here for your notes)

      Name of Activity – *Homework Support [Can be used in lieu of another activity at the beginning, middle, or end of the session if the student needs homework help.]*

      Description –

      Assessment –

      Assessment Notes – (make sure to leave room here for your notes)

CLOSING ACTIVITY:

<u>**Reflections**</u>**: My Thoughts on Today's Mathematics Lesson…**

What did you learn about your student this week (in terms of mathematics teaching and learning)?

What did you learn about your teaching (especially in terms of mathematics teaching and learning)?

What is one mathematics teaching and learning goal for your next lesson? How will you make this happen?