SECE 4350 - Methods of Teaching Middle & Secondary Mathematics

I. Course Information

Course: SECE 4350 - Methods of Teaching Middle & Secondary Mathematics
Semester Credit Hours: 3.0
Course CRN and Section: 22836 - OL1
Semester and Year: Fall 2017
Course Start and End Dates: 08/21/2017 - 10/15/2017

II. Instructor Information

Professor: Dr. Sandra M Trotman
Email: trotman@nova.edu
Phone: 954-262-7915
Fax: 954-262-3724
Office Hours:

Day	Time	Location
MTWRF	9:00am - 5:00pm	Carl DeSantis Building, 4th Floor, Rm 4129

Please contact me to schedule a meeting outside the period 2 pm -4pm.

III. Class Schedule and Location

Day	Date	Time	Location	Building/Room
	08/21/2017 - 10/15/2017		On-line Course	-

IV. Course Description

Catalog Description
This course will focus on methods of teaching mathematics in middle and secondary school. Students will explore major concepts and procedures that define the following mathematical domains: Number, Algebra, Geometry, Trigonometry, Statistics, Probability, Calculus, and Discrete Mathematics. Emphasis is on mathematical problem solving; the necessary training for lifelong learning; use of mathematics-specific technology and varied representational tools, including concrete models; alternative assessment; and techniques of assertive discipline including analyzing and considering research. Students will explore a variety of techniques and reflect on approaches most applicable to teaching and learning in the middle school and high school mathematics classroom. "Hands-on" approaches, resources, materials, technology, and ideas drawn from the student's experience will be discussed. A full and comprehensive grasp of the National and State standards in Mathematics will be developed along with the historical development and perspectives of each domain including contributions of significant figures and diverse cultures. There will be a 10 hour field experience in a middle or secondary school. Supervised field experience activities: collecting observation data using pre-selected tools, incorporating mathematics-specific technology,

teaching a lesson with activities to promote critical thinking, and working with the teacher and ESOL/LEP students in the classroom will require students to know, understand, teach, and be able to communicate their mathematical knowledge of the competencies. Prerequisites: EDUC 2500, EDUC 3330, EDUC 3350, EDUC 3360, and EDUC 3525. Frequency: Every Fall and Winter.

Course Rationale: This is a required course in the B. S. in Secondary School Mathematics Education Program. The course has been designed to correlate mathematics concepts with the National Council of Teachers of Mathematics Principles and Standards of School Mathematics, the Florida Subject Area Competencies, and the Florida Next Generation Sunshine State Mathematics Standards. It has also been designed to correlate the recommended pedagogical strategies with the Florida Teacher candidate Accomplished Practices, the Florida ESOL Standards, and the Interstate New Teacher Assessment and Support Consortium (INTASC) Standards**.**

V. Course Objectives / Learning Outcomes

1) Possess a deep understanding of how students learn mathematics and the pedagogical knowledge specific to mathematics teaching and learning.
2) Select and use appropriate enrichment, remediation or reinforcement activities, and technology to promote critical thinking skills and enhance student learning.
3) Design activities that demonstrate the ability to incorporate research, technology, standards (local, state, and national mathematics), and best practices to diagnose, assess, and evaluate the impact of instruction on student learning.
4) Demonstrate proficiency in conceptual understanding of specific mathematics content, concepts and procedures as well as the process of doing mathematics as they engage in classroom activities and during field experiences.

Course Objectives:

By the end of this course, the teacher candidate will

1. Utilize resources from professional mathematics education organizations such as print, digital, and virtual resources/collections. NCTM 6c, ESOL 1.b.5, InTASC 7i.c, FEAP a.2.d., CSLO 1.
2. Reason abstractly, reflectively, and quantitatively with attention to units. NCTM 2b, ESOL, InTASC 4b.p, 4c.p, 4j.k, 5d.p, 5m.k, 8f.p, 8k.p, 8j.k, FEAP a.3.a., a.3.f., CSLO 2.
3. Constructing viable arguments and proofs. NCTM 2b, ESOL, InTASC 4b.p, 4c.p, 4j.k, 5d.p, 5m.k, 8f.p, 8k.p, 8j.k, FEAP a.3.a., a.3.f., CSLO 2.
4. Critique the reasoning of others; represent and model generalizations using mathematics. NCTM 2b, ESOL, InTASC 4b.p, 4c.p, 4j.k, 5d.p, 5m.k, 8f.p, 8k.p, 8j.k, FEAP a.3.a., a.3.f., CSLO 2.
5. Recognize structure and express regularity in patterns of mathematical reasoning. NCTM 2b, ESOL, InTASC 4b.p, 4c.p, 4j.k, 5d.p, 5m.k, 8f.p, 8k.p, 8j.k, FEAP a.3.a., a.3.f., CSLO 2.
6. Use multiple representations to model and describe mathematics. NCTM 2b, ESOL, InTASC 4b.p, 4c.p, 4j.k, 5d.p, 5m.k, 8f.p, 8k.p, 8j.k, FEAP a.3.a., a.3.f., CSLO 2.
7. Utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others. NCTM 2b, ESOL, InTASC 4b.p, 4c.p, 4j.k, 5d.p, 5m.k, 8f.p, 8k.p, 8j.k, FEAP a.3.a., a.3.f., CSLO 2.
8. Organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences. NCTM 2d, ESOL 3.b.2, InTASC 8h(p), 8m(k), 8q(d), FEAP a.2.e, CSLO 4.
9. Plan and create developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences. NCTM, 4b, ESOL 3.a.1, 3.b.1, InTASC 2h.k, 2l.d, 8a.p, 8k.k, 8s.d, FEAP a.1.a, a.3.a., a.3.h, CSLO 1, 4, M 10.3.
10. Demonstrate equitable and ethical treatment of and high expectations for all students and apply teacher behaviors that indicate sensitivity to cultural and linguistic differences. NCTM 4d, ESOL 3.a.1, 3.b.1, InTASC 2h.k, 2l.d, 8a.p, 8k.k, 8s.d, FEAP a.1.a, a.3.a., a.3.h, CSLO 4.
11. Apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulative material and technology to enhance teaching and learning and build student understanding of mathematical concepts. NCTM 4e, ESOL 1.b.10, 3.a.1. 3.b.1, 3.c.2, 3.c.4, 3.c.5, InTASC 2b.p, 2g.k, 4a.p, 4f.p, 4g.p, 5c.p, 8d.p, 8n.k, FEAP a.3.a., a.3.g, CSLO 3, M 10.5.

12. Engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge. NCTM5b, FEAP a.1.c/InTASC 7b.p, 7i.k, 7j.k, 70.d, 7q.d, CSLO 1, M10.3.
13. Demonstrate commitment to learning with understanding by actively engaging in growth opportunities and reflective practices that directly relate to the learning and teaching of mathematics and to their development as a mathematics instructional leader. NCTM 6a, 6b, InTASC 4o(d), 9g(k), 9n(d), FEAP b.5.e, CSLO 1, 4.
14. Enumerate and explain the role of the NCTM Standards, local state and/or the Common Core standards as they apply to specific grade levels in the mathematics program. NCTM 1a, InTASC 4o(d), 7g.p, 9a(p), 9b(p), 9k(k), 9n(d), FEAP b.5.e, CSLO 1,4.

Legend for Standards	
Abbreviation	Name
CAEP	Council for the Accreditation of Educator Preparation. http://caepnet.org/standards/introduction
CCSS	Common Core State Standards http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf State School Officers. http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf
ESOL	Florida ESOL Standards http://www.fldoe.org/core/fileparse.php/7587/urlt/0064460 approvedteacherstandards.pdf
FEAP (AP)	Florida Educator Accomplished Practiceshttp://www.fldoe.org/profdev/FEAPs/
FSS	Florida State Standards http://www.fldoe.org/academics/standards/florida-standards/educatorresources.stml
InTASC	Interstate New Teacher Assessment and Support Consortium Standards (2011) http://www.ccsso.org/Documents/2011/InTASC_Model_Core_Teaching_Standards_2011.pdf
NCTM	National Council for Teachers of Mathematics. (2000). *Principles and standards for school mathematics.* Retrieved from http://www.nctm.org/standards
NEPF	Nevada Educator Performance Framework: Teacher Professional Responsibilities Standards and Indicators http://rpdp.net/admin/images/uploads/resource_147.pdf
TESOL	TESOL International Association. *TESOL/NCATE Standards for P–12 teacher education programs.* http://www.tesol.org/docs/books/the-revised-tesol-ncate-standards-for-therecognition-of-initial-tesol-programs-in-p-12-esl-teacher-education-%282010-pdf%29.pdf?sfvrsn=0

VI. Materials and Resources

Book Url: NSU Book Store

Course Required Texts and Materials: None. (See selected online materials)

Course Supplemental Materials:

American Psychological Association (APA). (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Pearson/Longman. (2014). *MyCompLab*. New York: Author. [online lab]

Wysocki, A. F., & Lynch, D. A. (2014). *The DK handbook* (3rd ed.) New York: Longman/Pearson.

NOTE TO TEACHER CANDIDATES: These three items are bundled for cost savings at the NSU Bookstore. The ordering

VII. Course Requirements

1. **Required Technology:** Each NSU student must acquire a working NSU email address for enrollment in all courses, whether instruction is live or online. To open an NSU email, go to http://www.nova.edu/resources/nsuidentity.html.
2. **A headset with a microphone is also required for participation in interactive online sessions.**

Each teacher candidate must acquire a working NSU email address for enrollment in all courses, whether or not instruction is live or online. To open an NSU email, go to http://www.nova.edu/resources/nsuidentity.html.

Each teacher candidate must use the appropriate programs/files (i.e., Microsoft Word, PDF, and JPG) when taking online courses in order to insure that the instructor can open and grade written work.

This course requires a Field Experience, your placement must be coordinated through the Office of Placement Services.

The *field experiences* for this course will encompass 10 or more hours of your time. You are expected to observe and/or work with students in an educational or virtual setting. Specific activities must be completed during the field experiences. These activities fall into three categories: (a) collecting observation data using pre-selected tools, (b) *teaching a lesson*, and (c) working with the teacher and/or students in the classroom. The due dates for the field experiences assignments are listed in the course schedule.

Nova Southeastern University requires candidates who need to fulfill a clinical or field experience, internship, practicum course requirement in an educational setting to complete the security clearance processes of the school, local school district, and state. The requirement of a clinical experience may include a background check, drug testing, fingerprinting, etc. For more information, please contact**:**

Rubyann C. Bradshaw
Office of Placement Services
Office: 954-262-8453| (800) 986-3223, ext. 28453

VIII. Course Schedule and Topic Outline

Course Schedule:

DATE	Assignments & Activities

Session One ***Mathematics Education***	**Assignment Due: Test** **Read & study:** Posamentier, A. S. (2004). Marvelous Math! *Educational Leadership,* *61*(5), 44–47. Ellis, M. W. (2003). Constructing a Personal Understanding of Mathematics: Making the Pieces Fit. *Mathematics Teacher; 96*(8), 538–542. **Review Syllabus**. Discuss assignments, when due and how each identified Florida Teacher candidate Accomplished Practice is reflected in the assignment; discuss each policy stated in Class Policies and Grading Criteria section. **FTCE resources** http://www.thelearningliaisons.com/ http://www.240tutoring.com/about-240tutoring/how-it-works/ **Common Core Standards** for mathematics. Retrieved fromhttp://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Session Two ***Learning & Teaching Mathematics***	**Assignment Due:** Online Discussion **Read & study:** http://www.cde.ca.gov/ci/ma/ Gersten, R., Chard, D. J., Jayanthi, M., Baker, S. K., Morphy, P., & Flojo, J. (2013). Mathematics instruction for students with learning disabilities: A meta-analysis of instructional components. *Review of Educational Research, 79*(3), 1202-1242. Johnson, Dans. (n.d). Teaching mathematics to gifted students in a mixed-ability classroom. Retrieved from http://www.kidsource.com/education/teach.gift.math.html#contents Lesson Scheduling Hawkins ughes, Gayle. (2008). Block scheduling and high-school mathematics instruction: effect on algebra ii end-of-course grades and act assessment mathematics scores. Retrieved from http://digitalcommons.liberty.edu/cgi/view content.cgi?article=1142&context=doctoral. **Activity 2:** Processes of doing Mathematics In groups of 3, describe how you will engage students in the five mathematical processes. (You will refer to this as you plan your unit and lessons. Discussions: Five Practices for Helping Teachers Move beyond Show and Tell. *Mathematical Thinking and Learning 10*(4): 313–40. doi:http://dx.doi.org/10.1080/10986060802229675

Session Three ***Assessment*** ***&*** ***Numbers and Operation***	**Assignment due:** Complete Mathematics Content Quizzes 3 &4 Review Articles: Historical development & contribution to culture **Read & Study** **Rubrics:** **What is your current view of rubrics? "Write down what you know about them and what experiences you have had using them. Read the article, then compare this reflection with any new insights gained."** **Brookhart, S. (2001). How to create and use rubrics for formative assessment and grading. Retrieved from http://www.ascd.org/publications/books/112001/chapters/What-Are-Rubrics-and-Why-Are-They-Important%C2%A2.aspx** Thompson, D. R., & Senk, S. L. (1998). Using Rubrics in High School Mathematics Courses. *Mathematics Teacher, 91*(9), 786–793. Allsopp, D., Lovin, L., Green, G., & Savage-Davis, E. (2003). Why Students with Special Needs Have Difficulty Learning Mathematics and What Teachers Can Do to Help. *Mathematics Teaching in the Middle School, 8*(6), 308-314. Gilbert, M. C. & Gilbert, L. A. (2002). Challenges in Implementing Strategies for Gender-Aware Teaching. *Mathematics Teaching in the Middle School, 7*(9), 522-527. Examine FCAT General Considerations and Question Development as outlined in the Florida FCAT Test Specifications and Guidelines. Review FCAT statewide data on student assessment from FCAT testing in math, language arts and the sciences as published on the Florida Department of Education Website. http://fcat.fldoe.org/fcinfopg.asp/ http://fcat.fldoe.org/fcatUnderstandReports.asp http://www.fldoe.org/asp/ftce/ftcecomp.asp http://fcat.fldoe.org/pdf/sample/0910/math/FL517324_10_MATH_AK_WT_r2g.pdf

Session Four ***Algebraic Thinking*** *&* ***Discrete Math***	**Assignment due:** 1. Complete Mathematics Content Quiz 5 2. Online Discussion **Read & Study** Goel, S. K., & Reid, D. T. (2001). A Graphical Approach to Understanding the Fundamental Theorem of Algebra. *Mathematics Teacher* 94(9), 749–759. Mahoney, J. F. (2002). Computer Algebra Systems in Our Schools: Some Axioms and Some Examples. *Mathematics Teacher,* 95(8):598–605. NGSSS Algebra**:** M.A.912.A1.1 – M.A.10.3. Retrieved from http://www.floridastandards.org/Standards/FLStandardSearch.aspx NGSSS Discrete Math: M.A.912.D1.1 – M.A.912.D.11.5. Retrieved from http://www.floridastandards.org/Standards/FLStandardSearch.aspx **Activity:** Demonstration Exploring mathematics that is necessary for decision making in non-continuous situations; and **Using matrices to solve systems of linear equations; or representing relations using graphs and matrices.** Case Study View video case study & observe what teachers do to develop students' algebraic thinking; investigate ways to incorporate algebra into 8-12 curricula.

Session Five ***Geometries*** *Measurement* *&* ***Calculus***	**Assignment due:** • Mathematics Problem Solving Tasks & Lesson Plan **Read & Study:** Strutchens, M. E., Harris, K. A., & Martin, W. G. (2001). Assessing Geometric and Measurement Understanding Using Manipulatives. *Mathematics Teaching in the Middle School, 6*(7), 402–405. Vonder Embse C., & Engebretsen, A. (1996). Using Interactive-Geometry Software for Right-Angle Trigonometry. *Mathematics Teacher, 89*(7), 602–605. NGSSS: Geometry & Trigonometry MA.912.G.1.1 – MA.912.G.8.5; MA.912.T.1.1 – MA.912.T.5.4 Retrieved from http://www.floridastandards.org/Standards/FLStandardSearch.aspx NGSSS Calculus: MA. 912.C.1.1 – MA.912.C.5.8 **Calculus:** Discussion and Demonstration: limit, continuity, differentiation, and integration, techniques and application of the calculus Interactives: Visit: http://www.hippocampus.org/Calculus And illustration of the Central Limit Theorem from http://www.learner.org/courses/mathilluminated/interactives/galton/
Session Six *Tools* *&* ***Resources***	**Assignment Due:** • Online Discussion **Read & Study:** Thompson, A. D., & Sproule, S. L. (2000). Deciding When to Use Calculators. *Mathematics Teaching in the Middle School, 6*(2), 126–129. Krumpe, N. & Keiser, J. (2003). Getting to Know a Calculator's Numerical Limitations. *Mathematics Teacher, 96*(2), 138–140. Herrera, T. (2001). Handheld Technology: An Essential Ingredient in Teaching and Learning Mathematics (An Interview with Bert Waits). Eisenhower National Clearinghouse: www.ENC.org. Wilson, J. W. (2006). Contemporary issues in the use of Computer Technology to improve mathematics teaching and learning. Retrieved from http://jwilson.coe.uga.edu/PingTung.html

Session Seven Data Analysis and Probability & Discrete Mathematics	**Assignment Due:** • Analyzing FCAT Test Scores & Instructional Impact • Remediation (content exam) **Read & Study** Holliday, B. W., & Duff, L. R. (2004). Using Graphing Calculators to Model Real-World Data. *Mathematics Teacher, 97*(5), 328–342. Florida State Standards: Probability & Statistics MA.912.P.1.1 – MA.912.P.3.4; MA.912.S1.1 – MA.912.S.5.8. Retrieved from http://www.floridastandards.org/Standards/FLStandardSearch.aspx Florida State Standards: Discrete Math: M.A.912.D1.1 – M.A.912.D.11.5. Retrieved from http://www.floridastandards.org/Standards/FLStandardSearch.aspx
Final Session **Wrapping UP!**	**Assignments Due:** • Instructional Design/Unit & Lesson Plans • Final Examination • Reflection of Field Experiences outcomes and student learning Remediation (if necessary for content assignments)

Topic Outline:

DATE	TOPICS

Session One ***Mathematics Education***	**Introductions, ground rules, expectations & goals** ***Course requirements*** **- Review syllabus: policies, objectives, assignments, grading criteria, etc.** -Review all state teaching standards: Florida Florida State Mathematics Standards, INTASC Principles, Florida Accomplished Practices, ESOL Strategies, and the NCTM CAEP content and pedagogy standards, along with basic APA style and format relevant to student essay writing. **Discussion Activities:** Mathematics Education and Math Reform Efforts A. The relationship of current research to historical perspectives B. Equity—the Right of All to learn mathematics Sanford Inspire Programs (Discuss procedures for registering and accessing modules) - http://sanfordinspireprogram.org/ http://sanfordinspireprogram.org/wp-content/uploads/2015/07/How_to_Register_for_On-Demand_Modules.pdf NCTM CAEP Standards (2012): Secondary (Initial Preparation). Retrieved from http://www.nctm.org/uploadedFiles/Math_Standards/NCTM%20NCATE%20Standards%202012%20-%20Secondary%20%282%29.pdf NCTM CAEP Mathematics Content for Secondary. Addendum to the NCTM NCATE Standards 2012. Retrieved from http://www.ncate.org/LinkClick.aspx?fileticket=BNUATB9XATk%3d&tabid=676

Session Two ***Learning & Teaching Mathematics***	**Developing Math Proficiency & Planning** A. Using research to inform learning (e.g., Brainsmart.org) 1. Conceptual vs. procedural learning 2 .Behaviorism, Constructivism 1. Planning for effective instruction *Sanford Inspire Module*: Planning and Delivery: Access and complete the Backward Design Module 1. Curriculum Planning – Designing a unit of work around learning goals - the backward design process." (Wiggins and McTighe) - three-stage diagram: 1. Identify desired results 2. Determine Acceptable Evidence 3. Plan Learning Experiences Effective Teaching strategies • Maly, Laura., Hollinger, Rosann., & Cuellar Rodriguez, Cynthia. (2011). Constructing and Transforming Vocabulary Perspectives in Your Math Classroom • Chard, David. (n.d.). Vocabulary Strategies for the Mathematics Classroom. Retrieved from http://www.eduplace.com/state/pdf/author/chard_hmm05.pdf • Special learning techniques including the relationship between national and state standards as they relate to specific curriculum in the classroom. **Activity 1:** Case Study Demonstration & guided practice Lesson plan demonstration/presentation

Session Three ***Assessment*** *&* ***Numbers and Operation***	Exploring Authentic Assessment, Summative & Formative Assessment Assessment Standards (NCTM) Model for Linking Instruction and Assessment Assessment Strategies: A. Identifying a variety of assessment procedures appropriate for ELLs of diverse backgrounds. Helping the Students with Special Needs 1. Tasks and activities that promote learning 2. Sensory Stimulation 3. Scaffolding experiences B. Performance tasks and Rubric assessment Chapter 10 1. Observing and Interviewing students 2. Work Samples Building rubrics: http://7-12teachercandidates.about.com/cs/rubrics/a/rubrics.htm Understanding Statewide Assessment Goals (FCAT, FSA) Understand the Need for Assessment Data in Preparing Effective Lessons Understand the role of new Assessment Data on Student Placement and Achievement. Activity: Using student work sample that focuses on Numbers and Operations, candidates identify student strengths and challenges/ error patterns, correct common misconceptions, prescribe needed instruction, and design a mathematics improvement plan using manipulative materials, graphic organizers, and scaffolding experiences. Error Patterns Analysis (Numbers & Operations) A. Correcting common misconceptions B. Providing needed instruction 1. The role of manipulatives 2. Talking and writing mathematics 3. Using graphic organizers Using games to practice mathematics **Activities:** • Demonstration & guided practice • Case Study • Align FTCE sample items withcompetencies and skills and Florida State Standards • Exploring strategies for developing and understanding Number Sense

Session Four *Algebraic Thinking* *&* *Discrete Math*	**The Nature of Contemporary Algebra** 1. Historic Development of Algebra 2. Today's School Algebra 3. Technology for Problem Solving 4. What Is Algebra for All? 5. Secondary School Math-Algebra: Variables & "Common Sense" Domains; Algebraic Expressions (Subt., Mult. & Div.); Rational Expressions [Primes & Div. by Zero]; Exploring Data with Graphs; absolute Value Relations http://www.learningupgrade.com/html/muhome.htm **Activity:** 1. After watching the videos on motion along a line, try completing the problem. http://www.brightstorm.com/math/precalculus/vectors-and-parametric-equations/motion-along-a-line/ Problem: Suppose an object moving at constantvelocity is at the point A (5, 3) when time t=0 seconds, and at point B (-4, 15) when t=3 seconds. Find the velocity and speed of the object, and parametric equations for the motion of the object. 2. Research presentation: Provide several examples of how your description of algebra would be reflected in classroom activities appropriate for either middle or high school math classes. • Use APA style and format 3. Visit http://www.hippocampus.org/ 4. Use Excel spreadsheets, Geometer's Sketchpad & Graphing Calculators http://jwilson.coe.uga.edu/EMT725/Roots.2.5/Roots.2.5.html http://jwilson.coe.uga.edu/EMT668/EMT668.html **Discrete Mathematics** 1. What is discrete mathematics? 2. Strategies for fitting discrete math into the grade 6-12 curriculum 3. Understanding and applying the fundamental ideas of discrete mathematics in the formulation and solution of Algebraic problems 4. Integrating technology and Problem Solving

Session Five ***Geometries*** *Measurement* *&* ***Calculus***	**Geometry: Discovery, Reasoning & Proof; Making Connections** The Nature of Contemporary Geometry Discussion: 1. Geometry – More than Euclid 2. Perspectives of formal proof 3. Van Hiele Levels of Geometric Thought 4. Three-dimensional geometry, Plane geometry 5. Teaching with Geometer's Sketchpad 6. Non Computer tools for geometric measurement 7. Integrating transformational geometry into traditional high school geometry 8. Exploring and analyzing geometric shapes, structures, and their properties: Spatial visualization, geometric modeling, non-Euclidean geometry e.g. spherical geometry, hyperbolic geometry, the geometry of curved surfaces Activities: http://illuminations.nctm.org/pages/68.html http://illuminations.nctm.org/pages/912.html Using Geoboards & Geometer's Sketchpads Examine: MA.912.G. 1.1 – 8.5; MA.912.T.1.1 – 5.4 Using Non-Euclid - My First Triangle http://cs.unm.edu/~joel/NonEuclid/triangle.html The Search for a Counter-Examples: http://cs.unm.edu/~joel/NonEuclid/exercise. html The shape of space: http://cs.unm.edu/~joel/NonEuclid/space.html

Session Six *Tools* *&* ***Resources***	**Note: Remind NSU students to complete formal course evaluations online at https://www.nova.edu/sbin/evaluations/oce-get-nsuid.cgi by required deadline.** Review of Comprehensive Mathematics Content Exam **Concrete to abstract tools: Enrichment tools & Technology in the Mathematics Classroom** Using Manipulatives Math & Music Discussion and modeling: • Graphing calculators, Geometer's sketchpad • Current dynamic software packages and problem solving • Internet resources including role playing simulations • Video programs promoting understanding of learning mathematics • Integrating technology into the classroom Models, A-V aids, calculators, computers **Activities:** • Discussion: Choose a topic in geometry and discuss how you would\ teach it with access to Geometer's Sketchpad. • Describe how analytic geometry, algebra and transformational geometry are integrated. • Video presentation: use of manipulative • Discussion of articles
Session Seven ***Data Analysis and Probability*** & Discrete Mathematics	Probability and Statistics Activity: Demonstration & guided practice A. Exploring Chance--Research on students' misconceptions (NAEP Exam) B Statistical Literacy C. Real-Life Applications D. Probability & Statistics [Permutations & Combinations] **Activity:** Demonstration & guided practice Combining Science and Math: **Visit http://www.hippocampus.org/Statistics** Discuss: **Coupal, L & Loucy, R (n.d).** ***The Probability Project.*** **Retrieved from** http://faculty.plattsburgh.edu/margaret.campion/seconded/lynn/Default.htm **Discrete Mathematics** Activity: Provide opportunities for students to demonstrate understanding and application of the fundamental ideas of discrete mathematics in the formulation and solution of combinatorics and finite probability problems; real world applications. Activity: Collaborate and develop verbal and written skills in the process of solving Data Analysis and Probability problems. Demonstration: Play the interactive DNA activity from http://www.learner.org/courses/mathilluminated/interactives/dna/

Final Session **Wrapping UP!**	**Required week for Final Exam** **Course evaluation** - Objectives - Expectations - Using APA style & Format

IX. Instructional Methods

The *primary methods of instruction* used in this course are live lecture, large and small group discussion, modeling, student presentations, cooperative learning activities, online searches, varied media exposure, and students' oral presentations/activities.

X. Assignments

Assignment 1: Comprehensive Mathematics Content Examination

During Week 2 of this course, a Comprehensive Secondary Mathematics Content Examination will be taken in class. You must demonstrate mastery of mathematics subject matter knowledge and meet expectations by obtaining a score of at least 80% on this criterion-referenced test.

Candidates scoring less than 80% on this pre-test will take a post-test during Session 7. You are instructed to closely follow the rubric when completing this assignment. Where possible, you must show all working, modes of representation, and problem-solving strategies.

A graphing calculator is required for some questions (NCTM 4e). Test items are aligned to the NCTM NCATE Mathematics Content for Secondary Addendum to the NCTM CAEP Standards 2012 A.1 – A.6, FEAP/INTASC: a.1.a, FPEC: 1.1- 9.4, and Course Objectives: 4, 5, 6. Attach the rubric for this Assignment from Appendix C. Time: 3 hours

This assessment is aligned with the NCTM process and content standards as follows:

NCTM Standards	**Indicators**
Standard 1: Content Knowledge	1a
Standard 2: Mathematical Practices	2b, 2c
Content Standards	
A.1. Number and Quantity	A.1.1, A.1.2, A.1.3, A.1.4
A.2. Algebra	A.2.1, A.2.2, A.2.3, A.2.4, A.2.5, A.2.6
A.3. Geometry and Trigonometry	A.3.1, A.3.2, A.3.3, A.3.4, A.3.5, A.3.6, A.3.7, A.3.7, A.3.8, A.3.9
A.4. Statistics and Probability	A.4.1, A.4.2, A.4.3, A.4.4, A.4.5
A.5. Calculus	A.5.1, A.5.2, A.5.3, A.5.4, A.5.5
A.6. Discrete Mathematics	A.6.1, A.6.2, A.6.3, A.6.4

Course Instructor: This course assignment has been designated as a CAEP Assessment for which we are collecting program data on the performance of the candidate. After reviewing this assignment, please link to the Assessment System and enter the evaluation results on the specified criteria (bolded areas of the rubric) for each candidate's assignment online.

Assignment 2. Mathematics Problem-Solving Tasks and Presentations to Faculty, Peers, and P-12 Students

ESOL: 3.2.j

InTASC: 2b.p, 2e.p, 2g.k, 2h.k, 2i.k, 2l.d, 4a.p, 4c.p, 4f.p, 4g.p, 4j.k, 4n.k, 5a.p, 5c.p, 5d.p, 5f.p, 5m.k, 5h.p, 5i.k, 5j.k, 5r.d, 6d.p, 6n.k, 6r.d, 6s.d, 7a.p, 7b.p, 7i.c, 7g.k, 7i.k, 7j.k, 7o.d, 7q.d, 8a.p, 8d.p, 8f.p, 8k.p, 8j.k,

8k.k, 8n.k
FEAP: a.1.a, a.1.c, a.2.d, a.3.a, a.3.b, a.3.c, a.3.d, a.3.e, a.3.f, a.3.f, a.3.g, a.3.h, a.3.i, NSU k/l,
FPEC/M: 1-9; 10.1
CSLO: 1-4
NCTM CAEP Standards: 2a, 2b, 2c, 2d, 2e, 2f, 3a, 3c, 3d, 3e, 3f, 3g, 4e, 5a, 5b, A.1.1, A.2.4, A.2.5,A.2.6, A.3.7, A.3.8, A.3.9, A.4.1, A.4.2, A.4.3, A.4.4, A.4.5, A.5.3, A.5.5.
Course Objectives: 2 – 15
The strategies for instruction of students with disabilities have been infused into FEAP a.3.

Part 1: The task

This assignment will require you to formulate, represent, analyze, and interpret eight (8) mathematics problems in order to review mathematics content, and further develop your conceptual understanding, and experience learning by exploration.These problems, drawn from Content standards A.1, A.2, A.3, A.4, A.5 may be be assigned at different points in the course and may require the use of the TI-Nspire CX or similar graphing calculators, graphics, computer, Geometer's Sketchpad, or other mathematics specific technology. For each problem, create a presentation using PowerPoint, Prezi, etc., that includes the following information:

1. All steps, problem-solving process/strategies used, and your problem-solving thinking processes. (Hint: Use Polya's problem solving model or SQRQCQ.)
2. Include at least one solution method (not just the answer) for each problem immediately below the problem.

Your class presentation will be evaluated on your ability to organize mathematical thinking, use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences (NCTM 2d). After your presentation, your classmates will analyze your problem solving strategy and provide feedback (NCTM 2a).

Part 2: Field Experience Teaching Activity

Select a grade that has at least one ESOL/ELL. Drawing on knowledge of research in mathematics education and knowledge of curriculum standards for secondary mathematics, prepare and teach an activity relating to one of the concepts/problem-solving tasks. The activity should include and describe visuals, charts, and mathematics-specific technology that have been incorporated in order to make the content appropriate and understandable for ELL/ESOL students (NCTM 3a, 3c, 4b, 4c, 7a).Be sure that your assessment is appropriate and incorporates one or more of the newer assessment techniques (NCTM 3g).You will be graded on the completion of the lesson plan, activities to promote critical thinking, the use of problem solving models, specific-mathematics related technology, and varied assessment approaches (i.e., formative and summative) (NCTM 3e, 3g, 4e, 5b, 5c).Once you have taught the lesson, write your reflections of the instructional process, student ability to make connections, formulate and solve problems, etc. (NCTM 3f). Feel free to write about possible modifications for the lesson activity. Use the language of mathematics to clearly communicate your mathematical thinking (NCTM 2d, 3d).

Assignment 3. Instructional Design/Unit & Lesson Plans

ESOL: 3.2.j
InTASC: 4n.k, 6r.d, 7a.p, 7b.p, 7i.c, 7g.k, 7i.k, 7j.k, 70.d, 7q.d
FEAP: a.1.a, a.1.c, a.2.d.
FPEC/M: 1-9; 10.1
CSLO: 1-4
NCTM Standards: 2d, 2e, 2f, 3a, 3c, 3d, 3e, 3f, 3g, 4a, 4b, 4c, 4d, 4e, 5a, 5b, 6c
Course Objectives:
Course Instructor: This course assignment has been designated as a CAEP Assessment for which we are collecting program data on the performance of the candidate. After reviewing this assignment, please link to the Assessment System and enter the evaluation results on the specified criteria (bolded areas of the rubric) for each candidate's assignment online.
This assessment requires candidates to design a unit plan to teach a specific age group (Grade 6 -12) for one week. Candidates develop five lesson plans that engage diverse learners in problem solving. The unit plan provides evidence of teacher candidates' understanding of (1) how students learn mathematics and (2) the pedagogical content knowledge specific to mathematics teaching and learning. The unit plan helps learners' develop a positive disposition toward mathematical processes and mathematical learning.

Candidates may collaborate with a classmate to create the instructional unit plan. Candidates need to address the unit as a whole by paying special attention to the organization of its content (NCTM Standards/Indicators 2d, 2e, 4a, 4b, 4e):

- Specific topic(s)/content strand(s)
- Unit goal and objectives (i.e., write an overall goal and a sequenced series of sub-objectives.) (NCTM 2f)
- Alignment of standards: National, state, etc. (e.g., NCTM and Common Core standards) (NCTM 3a)
- Evidence of pre-planning by using research based curricula and strategies (NCTM 3c, 6c)
- Differentiated instruction and activities (e.g., remedial, enrichment, extension) (NCTM 3c, 3d, 3e, 4c, 4d, 4e, 5a)
- Assessment instruments (with grading rubrics) to measure student understanding of the topics (NCTM 3f, 3g)
- Technology (NCTM 4e, 5b)
- Evaluation of the unit (i.e., Create a rubric to evaluate the unit).
- Five detailed lesson plans (NCTM 3a, 3c, 3d, 6c)

The objectives should be written to reach the highest level of the cognitive domain in order to foster students' critical and creative thinking. Also, be sure that the objectives reflect your state's P-12 academic standards. For example, if you are teaching in the state of Florida, use the *Florida Standards (Common Core Math Standards*) appropriate for the content that you are teaching. Identify the number(s) of the standard(s). Identify the *ESOL Strategies* you will use to meet the needs of all the ESOL students in your class.

Prepare a PowerPoint presentation highlighting one of the lessons to share with your colleagues in class. Show how the NCTM Standards and Florida Standards are being addressed and the accommodations you provide for ESOL/LEP learners. Reflect on how *graphing calculators and math specific technology* will be integrated into each lesson (NCTM 4e).The use of additional instructional technology is encouraged (e.g., SmartBoard).

References

2007 Mathematics Next Generation Sunshine State Standards. Retrieved January 1, 2013, from the Florida Bureau of Curriculum and Instruction at http://www.floridastandards.org/homepage/index.aspx (Note: These standards are in effect in P-12 Florida schools until 2014, when the Florida Standards (Common Core Mathematics Standards) are fully implemented.)

2010 Florida Standards (Common Core) – Mathematics. Retrieved July 23, 2014, from CPalms at http://www.cpalms.org/Public/search/Standard#0

XI. Grading Criteria

Guidelines – The requirements for each assignment are outlined in detail in this syllabus and attachments. Please follow the guidelines carefully in order to receive full credit.

B. Plagiarism – Teacher candidates will submit all major written assignments into *Turnitin* and then correct their work for plagiarism before submitting their assignments to their instructor. **Please note that if you plagiarize, you will earn a grade of F on the assignment. If you plagiarize a second time, you will earn a grade of F on the assignment and in the course. The instructor will report all instances of plagiarism to the administration.**

C.American Standard English (ASE) – All written work must be submitted in professional form. American Standard English grammar and mechanics is required. Please pay particular attention to correct spelling, capitalization, punctuation, grammar, and sentence and paragraph structure. All assignments must be submitted using Microsoft Word, be error free, and grammatically correct.

D.American Psychological Association Manual – All assignments must be completed using the style delineated in the *Publication Manual of the American Psychological Association* (APA). Please pay close attention to the format for: spacing, margins, title page, numbering of pages, headings, and references pages. Cite support from the literature in the field for the concepts and ideas you present in your assignment by paraphrasing and/or quoting and providing a reference for each new work cited (i.e., one-to one correspondence). At the end of your assignment, include references pages using the correct APA format for the works paraphrased and/or quoted. Please note: a page or paragraph number is required for

all citations in your work for this course (APA, 2010, p. 170). Review chapters six and seven in the *APA Manual* to insure that you are correctly paraphrasing and/or quoting and referencing works cited. All instructors will review the use of APA style during the first week of each course.

E.Grading of Assignments – The instructor reserves the right to refuse to read and/or correct an assignment that does not meet professional form using ASE and APA style standards.

F.Assignments Not Meeting Standards – The instructor refers teacher candidates who are having difficulty with reading the course content and/or writing assignments to meet ASE and APA standards to the Office of Tutoring and Testing for remediation. For critical tasks/key assessments that do not meet standards, the instructor works directly with the teacher candidate to remediate the work.

G.Synchronous Online Sessions – Instructors provide live online sessions to students to discuss course content, review assignment requirements, and give students an opportunity to ask questions. It is recommended that students attend the sessions.To accommodate teacher candidates' needs, these sessions will use a variety of media and will be recorded and posted for later access.

H. Late Assignments – Late assignments are NOT accepted.

I.Grading Rubrics – Rubrics for all assignments are located in the Appendixes.

J.Grading Scale – A list of the course requirements and the grade scale follow. Quality points are used to calculate the grade point average across programs in FCE.

Final Course Grade:

Course Requirements	Percentage of Total Grade	Due Week
Comprehensive Mathematics Content Exam	30%	3
Mathematics Problem Solving Tasks & Lesson Plan	30%	5
Instructional Unit/Design & Lesson Plans	25%	7
Weekly Discussions	10%	1-8
Participation and Attendance	5%	1-8
Total	100%	

Letter Grade	Percentage	Quality Points	Letter Grade	Percentage	Quality Points
A	94-100	C	73 -76		
A-	90 -93	3.75	C-	70 -72	1.75
B+	87 -89	3.50	D+	67 -69	1.50
B	83 -86	3.00	D	60 -66	1.00
B-	80 -82	2.75	F	0 -59	No Credit
C+	77 -79	2.50			

XII. Course Policies

Students should visit www.fcas.nova.edu/about/policies.cfm to access additional required college-wide policies. It is your responsibility to access and carefully read these policies to ensure you are fully informed. As a student in this class, you are obligated to follow these college-wide policies in addition to the policies established by your instructor.

The following policies are described on this website:

- Academic misconduct
- Last day to withdraw

- Email policy
- Student course evaluations
- Student responsibility to register
- Student responsibility for course prerequisites

B. UNDERGRADUATE TEACHER EDUCATION PROGRAMS' POLICIES

Refer to the class policies on the Teacher Candidate Resources webpage at http://education.nova.edu/students/teachercandidateresources.html.

XIII. University Policies

A. Academic Misconduct

The University, as a community of scholars, embraces the free expression of ideas in furthering the acquisition of knowledge, while upholding the principles of trust, responsibility, honor, integrity, and ethical behavior in meeting program and degree requirements. As such, students are expected to adhere to a standard of academic honesty in all work submitted. Violations of academic honesty standards constitute academic misconduct, and violate the NSU Code of Student Conduct and Academic Responsibility, available online http://education.nova.edu/students/current-students/studentcataloghandbook.html.

The following acts violate the academic honesty standards and will result in a finding of academic misconduct:

1. **Cheating in any form**: intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise, or having others complete work or exams and representing it as one's own.
2. **Fabrication**: intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
3. **Facilitating academic dishonesty**: intentionally or knowingly helping or attempting to help another to violate any provision of this code.
4. **Plagiarism**: the adoption or reproduction of ideas, words, or statements of another person as one's own without proper acknowledgment. (See Academic Honesty Standards.)
5. **Conspiracy to commit academic dishonesty**: assisting others to commit acts of academic misconduct
6. **Misrepresentation**: intentionally making false statements or omissions of facts in a contract. Examples include, but are not limited to portfolios, cover sheets, and clinic, training station, and practicum agreements.
7. **Bribery**: offering of goods, services, property or money in an attempt to gain an academic advantage.
8. **Forging or altering documents or credentials**: examples include, but are not limited to signatures, dates and other information on portfolios, cover sheets, and clinic, training station, and practicum agreements.
9. **Knowingly furnishing false information to the institution.**

Penalties for academic misconduct can range from reduced grades on assignments or in courses, to failing grades on assignments or in courses, as determined by the course professor. Academic misconduct may also result in dismissal from the Abraham S. Fischler College of Education without the possibility of re-enrolling at any time. Students may not withdraw from a course in progress to avoid a failing grade upon receiving notice that academic misconduct may have occurred.

Note: If a charge of academic misconduct is determined in a course, any student initiated withdrawal for that course will be administratively reversed and a grade of F will be entered on the student's transcript for that course.

B. Plagiarism

Work that is submitted for credit must be the original work of the student. Any assignment that is not the original work of the student is considered plagiarized and in violation of the Code of Student Conduct and Academic Responsibility. Plagiarism occurs when another person's work, words, or ideas are represented as one's own without the use of a school-recognized method of citation (e.g., copied from another source such as an author or another student without properly acknowledging the actual writer/author) or when another person's work is copied or otherwise duplicated for academic credit. Plagiarism also occurs when knowingly giving or allowing one's own work to be copied or otherwise duplicated by another for academic

credit, or when resubmitting one's own work for academic credit (i.e., work that has previously been submitted for academic credit). Cutting and pasting from online sources on the Internet without proper acknowledgment and citation of primary and secondary sources (e.g., writers/authors/organizations) also constitutes plagiarism.
Penalties for plagiarism may range from reduced grades on assignments or in courses, to failing grades on assignments or in courses, as determined by the course professor. A subsequent determination of plagiarism in a future course (i.e., a second violation) may result in dismissal from the Abraham S. Fischler College of Education without the possibility of re-enrolling at any time.
Course assignments submitted in partial fulfillment of degree requirements may be checked for plagiarism. *Students may not withdraw from a course in progress to avoid a failing grade or other consequence upon receiving notice that plagiarism may have occurred*. If a charge of plagiarism is determined in a course, any student initiated course withdrawal for that course will be administratively reversed and a grade of F will be entered on the student's transcript for that course [see Academic Misconduct]. Student access to online courses, and attendance at site-based courses, will be discontinued following a determination of plagiarism that results in an "F" for the course. **All students are entitled to due process pursuant to Fischler College of Education policies and procedures.**

C. Americans with Disabilities Act (ADA)

Nova Southeastern University complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. No qualified individual with a disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination in any activity, service, or program of the university solely by reason of his or her disability. Each qualified individual with a disability who meets the academic and technical standards required to enroll in and participate in Nova Southeastern University's programs shall be provided with equal access to educational programs in the most integrated setting appropriate to that person's needs through reasonable accommodation.
At the postsecondary level, it is the student's responsibility to initiate the process for disability services. The process for obtaining a reasonable accommodation is an interactive one that begins with the student's disclosure of disability and a request for a reasonable accommodation. The student has the responsibility to provide Nova Southeastern University with proper documentation of disability from a qualified physician or clinician who diagnoses disabilities and sets forth the recommended accommodations.
The necessary forms and procedure for requesting disability-related accommodations can be obtained from the NSU Office of Student Disability Services through its website at http://www.nova.edu/disabilityservices/index.html, via e-mail at disabilityservices@nova.edu, or by calling 954-262-7185 (toll free at 800-986-3223, ext. 27185).
To ensure that reasonable accommodations can be provided in a timely manner, all forms and documentation should be submitted to the NSU Office of Student Disability Services a minimum of four (4) weeks prior to the commencement of classes for any given semester.

D. Course/Instructor Evaluation

- It is expected that all students will participate in the online Course/Instructor Evaluation at or near the end of the course.
- Notices of Course/Instructor Evaluation access are sent to registered students by NSU email.

E. The current edition of the **FCE Catalog and Student Handbook** is available http://education.nova.edu/students/current-students/studentcataloghandbook.html. This document provides extensive information on University and FCE policies, regulations and procedures.
Students should visit http://www.nova.edu/academic-affairs/nsu-syllabus-policy.html to access additional required college-wide policies. It is your responsibility to access and carefully read these policies to ensure you are fully informed. As a student in this class, you are obligated to follow these college-wide policies in addition to the policies established by your instructor.
The following policies are described on this website:

- Academic misconduct
- Last day to withdraw
- Email policy
- Student course evaluations
- Student responsibility to register
- Student responsibility for course prerequisites

Academic Resources

Nova Southeastern University offers a variety of resources that may aid in student success. Among these resources are:

Accommodations for students with documented disabilities: For more information about ADA policy, services, and procedures, students may call the Office of Student Disability Services at 954-262-7189 or visit http://www.nova.edu/disabilityservices.

Tutoring and testing center:

Students are encouraged to use the free, individualized tutoring services offered by the Tutoring and Testing Center (TTC). TTC provides a supportive atmosphere in which tutors and students work collaboratively on improving students' writing, math and/or science skills. http://www.nova.edu/tutoring-testing/index.html

XIV. Appendix/Appendices

Appendix A
Field Experience Information
COURSE: SECE 4350 Methods of Teaching Middle & Secondary Mathematics

I. What are field experiences?

Field experiences are more than what are typically known as field experiences. In field experiences, NSU students, known as teacher candidates, may observe and/or work with children in a school setting. They require the student to observe and/or work with children in a school and/or virtual setting plus reflect on new knowledge that occurs from those experiences. The teacher candidate is asked to apply information learned in course work and think reflectively about the field experiences to develop the skills of an effective practitioner.

II. What are the general requirements?

It is mandated that all education majors in state approved initial teacher preparation programs participate in a planned series of field experiences as an integral part of their training. NSU requires a minimum of ten hours of field experiences for each major education course. Underlying this commitment is the philosophy that field experiences enable teacher candidates to apply theory and practice in actual classrooms and/or virtual settings while acquiring the competencies necessary for successful teaching.

All teacher candidates, including non-education majors and certification teacher candidates, are responsible for completing all field experiences procedures and will be required to use and submit all required field experiences documents.

III. If this course requires a Field Experience, your placement must be coordinated through the Office of Placement Services. The placement process is coordinated through University and County officials only. Direct school contact is not permitted without prior approval from this office. **All School-Based Field Placements must be arranged through the Office of Placement Services.** Please contact our office as soon as you have registered for a course requiring participation in a PreK-12 classroom:

Rubyann Bradshaw
rb516@nova.edu
(954) 262-8453

Each school district determines how school-based field placements are arranged with their district's schools. Direct school contact by teacher candidates is not permitted without prior approval from the Office of Placement Services. Because the amount of time needed to secure school-based field placement varies by school district, students need to **request placement immediately after registering for a course that requires any activity in a PreK-12 classroom or school**. Requests for should be made **no later than Week 1** of class. Placements in some school districts can take as long as four weeks.

If you are requesting your first placement, the first step is Security Clearance (background check). Once obtained, it is your responsibility to keep your Security Clearance current throughout your program. Please note that most school districts require an annual renewal of a Security Clearance, and this may require an additional fee.

Security Clearance must be obtained---and be current---pursuant to your district's requirements, BEFORE placements can be requested.

à Security Clearance Needed for Field and Clinical Experiences in All Courses ß
Nova Southeastern University requires candidates who need to fulfill a clinical or field experience, internship, practicum course requirement in an educational setting to complete the security clearance processes of the school, local school district, and state. The requirement of a clinical experience may include a background check, drug testing, fingerprinting, etc.For information on these requirements, policies, and procedures, please refer to **Obtaining Security Clearance** http://education.nova.edu/students/current-students/gtep/how-to-get-a-field-placement.html at the **Office of Placement Services**http://education.nova.edu/students/current-students/gtep/office-of-placement-services.html Information on the Florida requirements for **Background Screening Requirements** is provided at http://www.fldoe.org/edstandards/background_screening.asp. Additional information on ethical standards for teachers of Florida is provided online at the **Office of Professional Practices** (http://www.fldoe.org/edstandards/).
Placements for Field Experience Course Requirements and for Applied Professional Experience, Field-Based Project, Reading Practicum, and Internship/Externship Capstone Courses
Directions for Requesting a Field Placement
If a field experience is required and placement in a school is needed for this course, contact the following office to arrange your placement within a school in any given school district (and to get assistance with security clearance). **Rubyann BradshawOffice of Placement Servicesrb516@nova.eduOffice: 954-262-8453| (800) 986-3223, ext. 28453**Certain requirements must be met, and they vary from district to district. Further information is available at: http://education.nova.edu/students/current-students/gtep/office-of-placement-services.html **Important! Placements take time to coordinate. Contact this office as soon as possible.**
Once You Have Your Placement:
Report Demographic Information about Field Experience or Capstone Site
Students completing field experiences and field-based capstones must submit the demographic information about their site in the LiveText system.
Report Your Field Placement Location
Everyone completing a field experience or practicum is required to report the field experience location.Once you have completed your field experience, please report your field experience to your instructor with the demographic information for the school.

Appendix B

SECE 4350 Methods of Teaching Middle & Secondary Mathematics

Field Experiences Verification Form

Teacher Candidate's Name **Instructor's Name**

Candidate's Directions

1. Fill out the areas highlighted in yellow.
2. Obtain the cooperating teacher's initials for each assigned task and the total number of hours.
3. Submit the completed form to your instructor on the due date.
4. The instructor's signature on this form does not verify completion of field experiences nor indicate a passing grade for the course.

Placement Information

School's Name

Cooperating Teacher's Name **Grade Level/Room Number**

Cooperating Teacher's Email **Phone Number**

ASSIGNED TASKS*[Insert the number of hours in the schools and/or virtual hours]*	**Cooperating Teacher's Initials**
Assigned for this Course:	
Teach a Mathematics lesson to a group/whole class	
Take attendance	
Collect/distribute papers	
Practice giving specific praise and corrective feedback	
Use multimedia tools	
Teach a lesson applying & assessing state standards	
Accommodate diverse learners (e.g., ESE, ESOL)	
Reinforce rules, procedures, & consequences in the classroom	
Teach a Mathematics lesson to a group/whole class	
Total Number of Hours	

Cooperating Teacher's Directions

1. Initial the appropriate areas on the first page.
2. Rate the teacher candidate on the items in the table by circling the letter for the rating that best represents his/her performance on the items below.
3. Answer the questions below using the back of the form.
4. Sign the form.

NM	**Not Met**	Teacher candidate performed task poorly or failed to perform task.
M	**Met**	Teacher candidate performed assigned tasks with moderate proficiency and guidance.
E	**Exceeded**	Teacher candidate performed assigned task with proficiency and minimal guidance.

NM	**M**	**E**	Established and maintained rapport with students	**NM**	**M**	**E**	Adhered to the code of ethics and principles of professional conduct
NM	**M**	**E**	Demonstrated enthusiasm for teaching	**NM**	**M**	**E**	Demonstrated knowledge and confidence in subject matter
NM	**M**	**E**	Attended as scheduled or made alternative arrangements	**NM**	**M**	**E**	Demonstrated knowledge and confidence in ESOL strategies
NM	**M**	**E**	Arrived punctually	**NM**	**M**	**E**	Demonstrated knowledge and confidence in the teacher education standards
NM	**M**	**E**	Worked effectively with the classroom teacher and other staff	**NM**	**M**	**E**	Demonstrated professionalism in dress and demeanor

National and State Teacher Education Standards
ESOL 1.1.b, 4.1.b
FEAP 2a, 2b, 2c, 2d, 2e, 2f, 2g, 2h & 2i
InTASC 2d(p), 2f(p), 2j(k), 2l(d), 2m(d), 3a(p), 3b(p), 3c(p), 3e(p), 3f(p), 3h(p), 3i(k), 3j(k), 3k(k), 3l(k), 2m(d), 3m(k), 3n(d), 3o(d), 3p(d), 3q(d), 3r(d), 4m(k), 5g(p), 8g(p), 8h(p), 8m(k), 8o(k), 8q(d), 8r(d) &10q(d)

Questions

1.Throughout this semester, what progress have you seen in this teacher candidate?
2.Based on your interaction with the teacher candidate, please indicate one or two suggestions that might enhance his/her potential for success in future field experiences and eventually as a classroom teacher.
3.Please provide any other comments regarding the teacher candidate's field experience in your classroom.

4.Have you discussed this evaluation with the teacher candidate?

Cooperating Teacher's Signature

Course Instructor's Directions

1.The instructor reviews the Field Experiences Verification Form for accuracy and completion, including checking the data entry in the Key Assessment System.
2.The instructor grades the form by circling the appropriate performance level indicated below.
3.The instructor returns the form to the teacher candidate.
4.Questions or concerns can be addressed by calling the UTEP at 1-800-338-4723 or (954) 262-7911 and asking for the Office of Placement Services.

NM	**Not Met**	**< 80**	Teacher candidate performed task poorly or failed to perform.
M	**Met**	**80-89**	Teacher candidate performed assigned tasks with moderate proficiency and guidance.

E	**Exceeded**	**90 or >**	Teacher candidate performed assigned task with proficiency and minimal guidance.

Course Instructor's Signature

Appendix C

SECE 4350: Methods of Teaching Middle & Secondary Mathematics

Lesson Plan Template

Teacher Candidate Directions: Complete the tables below. Complete each of the sections for your lesson plan by adding the appropriate information.

1. **General Information**

Name	**Date**
School	**Teacher's Name**
Age/Grade Level	**Subject Area**
Lesson Title	**Length of Time and Date(s)**

1. **Contextual Background**

Are diverse students present?	**Yes**	**No**
Number of female students		
Number of male students		
Number of limited English proficient students		
Number of exceptional student education students		

Note. Please follow the directions on the last page of the template for **Collection of Demographic Data for Clinical and Field Experiences**.

III. Instructional Resources and Materials

What are the resources (i.e., teaching materials, textbooks, websites, etc.) I will use to plan this lesson? List the resources on the references page at the end of the Lesson Plan.

IV. Anticipatory Set

How can I relate what I will be teaching to students' prior knowledge? How will I motivate the students to learn? What stories or experiences can I share to promote students' understanding?

V. Content/Standards/Grade Level Expectations

What is the subject area and topic? What is expected at the grade level I am teaching?
What are the applicable standards (e.g., NCTM, http://www.fldoe.org/bii/curriculum/sss/ or http://www.cpalms.org/homepage/index.aspx) I will use for this content? What are the Big Ideas/Themes/Competencies, Benchmarks, and Common Core Standard(s) as applicable?
Next Generation Sunshine State Standards or Nevada Standards, NCTM Standards, Common Core Standards or applicable state academic standards) I will use for this content? What are the Big Ideas/Themes/Competencies, Benchmarks, and Common Core Standard(s) as applicable?

- **LIST THEM HERE**! (See the assignment and its corresponding rubric for the standards being addressed)

HINT: NGSSS: Helpful hint -- Google FLDOE standards, click on the standards and access the grade, benchmark/Big Ideas, and levels. You can export this information to word doc.
If you are integrating math and Language Arts, then include the language art standard(s) or math and technology. However, the focus MUST be on the math. All lessons MUST include the NCTM standard(s) that apply to technology.

VI. Goal(s)

What is the big picture? How does this lesson fit in with prior and future lessons? Goals are broad and long-term.

VII. Objective(s)

What do I want the students to learn by the end of the lesson? Include objectives that

promote continuous intellectual (e.g., critical thinking and problem solving), social, emotional, and physical development of each student as applicable. Use verbs that are behavioral and observable.

EXAMPLE:

By the end of this lesson, all students will:

1. Describe the difference between 2D and 3D shapes with at least 95% accuracy as documented by their performance on the teacher-made activity. (Use this example as a guide to create SMART Objectives)
2. Demonstrate …
3. Explain ….
4. Calculate ….” (Use Bloom’s Taxonomy to address higher order thinking skills)

VIII. Accommodations

What specific strategies will I use for my students with diverse needs (i.e., ESE, ESOL, DOP, gifted and remedial) teaching this lesson?

What multi-sensory strategies, content-based vocabulary, and suitable assessment instruments will I use?

Include ESOL codes and strategies… see Dr. Rashid Moore’s website for details. All identified accommodations must be clearly shown in the activity section of the instruction/input.

IX. Instruction/Input

EXAMPLE:

- *Content:*
- Write/summarize this including the vocabulary (attach any student work sample, etc.)
- List questions that may be used to develop critical thinking
- *Materials:* List all materials including integrated technologies.
- *Activities or procedures*: Show how each objective/concept will be developed – *what activities the teacher and students will be doing to achieve these objectives. Show a logical progression from concrete to abstract knowledge.*
- What methods and activities do I need to share with my students to assist them in meeting the objectives? How will I chunk the content into “digestible bites” for the students? CLEARLY DESCRIBE THE ACTIONS: STUDENTS & TEACHER

X. Proactive Classroom Management Planning

What will I do to optimize classroom management to prevent potential problems?

What teacher and student strategies will I use that are specific to this particular lesson?

XI. Monitoring

How will I monitor students’ learning during the lesson?

What am I doing to check for understanding and extend students’ thinking?

XII. Assessment

How will I determine that the students learned what I wanted them to learn based on the objective(s)? Is the assessment formative or summative? Is the assessment traditional or alternative? Show evidence of knowledge of different forms of assessment.

XIII. Closure

How will I involve students in a review of the lesson? How will I promote students’ learning connections to future lessons (e.g., homework, family activities)?

XIV. Reflections

What aspects of the lesson were successful? What aspects of the lesson could be improved?

To be completed after lesson has been taught

- **NB:** Complete for the *Problem Solving Lesson Plan*. Reflect on how you met the identified standards**.**

XV. References

What were all of the instructional resources, materials, texts, websites, etc. that I used to plan this lesson? Use APA format to list the references at the end of the Lesson Plan.

RUBRICS

Key Assessment for: Assessment 4 addresses the following standards: ESOL: 5.1.a, 5.1.b; InTASC: 4c.p, 4j.k, 5d.p, 5m.k, 8f.p, 8k.p, 8j.k; FEAP: a.1e, a.3.d, a.3.f; NCTM Standards: 3d, 3e, 3f, 3g SECE 4350: Methods of Teaching Middle & Secondary Mathematics

Assessment: Instructional Design/Unit and Lesson Plans

Individual Evidence Reflection Form

Directions: *This form must be completed for any key assessment that doesn't contain a reflection as part of the key assessment rubric.* The teacher candidate must complete the Sections I-II of the form; the course instructor completes the last section of the form, Section III.

Section I: General Information – Fill in all of the blanks.

Teacher Candidate's Name:

NSU I.D. Number:

Section II: Standard Demonstrated – Write a paragraph to address the following items.

1. Convince the evaluator that the critical task you have completed appropriately *demonstrates the standard* by:

(a) giving specific *examples* that show how the critical task met the standard, and

(b) *quoting language* from the standard(s) as needed.

2. Remember to be reflective in your answer, stating how you have *grown as a professional*.

_____ _____ _____

Teacher Candidate's Printed Name **Teacher Candidate's Signature** **Date**

Section III: Instructor's Grade and Feedback on Individual Evidence Reflection Form and Key Assessment

The instructor provides feedback and grades the IERF by checking the appropriate box and entering the grade below.

Feedback:

Standards	**ü**	**Grade**
Did Not Meet		
Met		
Exceeded		

The instructor provides the grade on the key assessment by checking the appropriate box and entering the grade below.

Standards	**Check**	**Grade**
Did Not Meet		
Met		
Exceeded		

The instructor signs and dates the IERF below.

_____ _____ _____

Instructor's Signature **Instructor's Typed Name** **Date**

Key Assessment Remediation Directions:

1. The instructor of the course rates each competency/skill demonstrated in the assignment as "Didn't Meet," "Met," or "Exceeded" the expected level of mastery on this critical task/key assessment rubric.
2. If the teacher candidate earns a grade of less than B- on this critical task/key assessment, the candidate must remediate the skills/competencies rated as "Does Not Meet" with the instructor of the course.
3. The teacher candidate earns the grade for the critical task/key assessment based on the work demonstrated in the original submission of the assignment.

The grade for course is not revised as a result of successful remediation.

4. **Successful remediation must be completed by the teacher candidate within one eight-week term following completion of the course.**

Key Assessment Coversheet for: This NCATE Assessment addresses the following standards: NCTM Standards: 2a, 2b, 2c, 2d, 2e, 2f, 3a, 3c, 3d, 3e, 3f, 3g, 4e, 5a, 5b, A.1.1, A.2.4, A.2.5, A.2.6, A.3.7, A.3.8, A.3.9, A.4.1, A.4.2, A.4.3, A.4.4, A.4.5, A.5.3, A.5.5.

SECE 4350: Methods of Teaching Middle & Secondary Mathematics
Assessment: Mathematics Problem-Solving Tasks and Presentations to Faculty, Peers, and P-12 Students

Individual Evidence Reflection Form

Directions: *This form must be completed for any key assessment that doesn't contain a reflection as part of the key assessment rubric.* The teacher candidate must complete the Sections I-II of the form; the course instructor completes the last section of the form, Section III.

Section I: General Information – Fill in all of the blanks.

Teacher Candidate's Name:

NSU I.D. Number:

Section II: Standard Demonstrated – Write a paragraph to address the following items.

1. Convince the evaluator that the critical task you have completed appropriately *demonstrates the standard* by:
(a) giving specific *examples* that show how the critical task met the standard, and
(b) *quoting language* from the standard(s) as needed.
2. Remember to be reflective in your answer, stating how you have *grown as a professional*.

_____ _____ _____

Teacher Candidate's Printed Name **Teacher Candidate's Signature** **Date**

Section III: Instructor's Grade and Feedback on Individual Evidence Reflection Form – The instructor provides feedback and grades the IERF Form by checking the appropriate box below.

Feedback:

Standards	**ü**
Did Not Meet	
Met	
Exceeded	

The instructor identifies whether or not the teacher candidate's key assessment met the standard(s) specified by the checking the appropriate box in the table.

Standards	**ü**
Did Not Meet	
Met	
Exceeded	

Critical Task Grade: _____

_____ _____ _____

Instructor's Signature **Instructor's Typed Name** **Date**

Key Assessment Coversheet for: This NCATE Assessment addresses the following standards: NCTM Standards: A.1.1, A.1.3, A.1.4, A.2.1, A.2.2, A.2.3, A.2.4, A.2.6, A.3.1, A.3.2, A.3.3, A.3.4, A.3.5,
A.3.6, A.3.7, A.3.8, A.3.9, A.4.1, A.4.2, A.4.3, A.4.4, A.4.5, A.5.1, A.5.2, A.5.3, A.5.4, A.5.5, A.6.1, A.6.2, A.6.3, A.6.4, 1a, 2b, 2c.

Appendix D

SECE 4350: Methods of Teaching Middle & Secondary Mathematics

Assessment: Comprehensive Mathematics Exam

Individual Evidence Reflection Form

Directions: *This form must be completed for any key assessment that doesn't contain a reflection as part of the key assessment rubric.* The teacher candidate must complete the Sections I-II of the form; the course instructor completes the last section of the form, Section III.

Section I: General Information – Fill in all of the blanks.

Teacher Candidate's Name:

NSU I.D. Number:

Section II: Standard Demonstrated – Write a paragraph to address the following items.

1. Convince the evaluator that the critical task you have completed appropriately *demonstrates the standard* by:

(a) giving specific *examples* that show how the critical task met the standard, and

(b) *quoting language* from the standard(s) as needed.

2. Remember to be reflective in your answer, stating how you have *grown as a professional*.

_____ _____ _____

Teacher Candidate's Printed Name **Teacher Candidate's Signature** **Date**

Section III: Instructor's Grade and Feedback on Individual Evidence Reflection Form – The instructor provides feedback and grades the IERF Form by checking the appropriate box below.

Feedback:

Standards	**ü**
Did Not Meet	
Met	
Exceeded	

The instructor identifies whether or not the teacher candidate's key assessment met the standard(s) specified by the checking the appropriate box in the table.

Standards	**ü**
Did Not Meet	
Met	
Exceeded	

Critical Task Grade: _____

_____ _____ _____

Instructor's Signature **Instructor's Typed Name** **Date**

Appendix E
SECE 4350 – Methods of Teaching Middle and Secondary Mathematics
Rubric for Comprehensive Mathematics Content Examination

This assignment will be graded using the following Scoring Rubric
Performance Criteria
The teacher candidate demonstrates mastery of subject matter knowledge on either the pre or post subject matter Test.
-The teacher candidate scores higher than 90% on the subject matter test. (Exceeded)
-The teacher candidate scores at least 80% to 89% on the subject matter test. (Met)
-The teacher candidate scores less than 80% on the subject matter test. (Not Met)

Element	**Not Met (0)**	**Met (4)**	**Exceeded (5)**
NCTM Standard 2: Mathematical Practices			
NCTM Standard 2: Mathematical Practices *Indicator* 2bReason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others; represent and model generalizations using mathematics; recognize structure and express regularity in patterns of mathematical reasoning; use multiple representations to model and describe mathematics; and utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others.	The candidate's explanations and solutions show little or no evidence of ability to:- reason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others;- represent and model generalizations using mathematics;- recognize structure and express regularity in patterns of mathematical reasoning;- use multiple representations to model and describe mathematics; and- utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others.	The candidate's explanations and solutions show some evidence of ability to:- reason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others;- represent and model generalizations using mathematics;- recognize structure and express regularity in patterns of mathematical reasoning;- use multiple representations to model and describe mathematics; and- utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others.	The candidate's explanations and solutions show strong evidence of ability to:- reason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others;- represent and model generalizations using mathematics;- recognize structure and express regularity in patterns of mathematical reasoning;- use multiple representations to model and describe mathematics; and- utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Standard 2: Mathematical Practices *Indicator* 2cFormulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.	The candidate's written problem solving processes does not indicate knowledge of the ability to formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.	The candidate's written problem solving processes indicate the ability to formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.	The candidate's written problem solving processes clearly indicates the ability to formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.
NCTM Content Standard A.1. Number and Quantity			
1a) Demonstrate and apply knowledge of major mathematics concepts, algorithms, procedures, applications in varied contexts, and connections within and among mathematical domains (Number, Algebra, Geometry, Trigonometry, Statistics, Probability, Calculus, and Discrete Mathematics) as outlined in the *NCTM NCATE Mathematics Content*			
NCTM Content Standard A.1. Number and Quantity *Indicator* A.1.1Structure, properties, relationships, operations, and representations including standard and non-standard algorithms, of various types of numbers and number systems including integer, rational, irrational, real, and complex numbers	The candidate's explanations and solutions show little or no evidence of ability to use structure, properties, relationships, operations, and representations including standard and non-standard algorithms, of various types of numbers and number systems including integer, rational, irrational, real, and complex numbers.	The candidate's explanations and solutions show some evidence of ability to use structure, properties, relationships, operations, and representations including standard and non-standard algorithms, of various types of numbers and number systems including integer, rational, irrational, real, and complex numbers.	The candidate's explanations and solutions show strong evidence of ability to use structure, properties, relationships, operations, and representations including standard and non-standard algorithms, of various types of numbers and number systems including integer, rational, irrational, real, and complex numbers.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Content Standard A.1. Number and Quantity *Indicator* A.1.3Quantitative reasoning and relationships that include ratio, rate, and proportion and the use of units in problem situations	The candidate's explanations and solutions show little or no evidence of ability to use quantitative reasoning and relationships that include ratio, rate, and proportion and the use of units in problem situations.	The candidate's explanations and solutions show some evidence of ability to use quantitative reasoning and relationships that include ratio, rate, and proportion and the use of units in problem situations.	The candidate's explanations and solutions show strong evidence of ability to use quantitative reasoning and relationships that include ratio, rate, and proportion and the use of units in problem situations.
NCTM Content Standard A.1.Number and Quantity *Indicator* A.1.4Vector and matrix operations, modeling, and applications	The candidate's explanations and solutions demonstrate strong evidence of ability to solve problems involving vector and matrix operations, modeling, and applications.	The candidate's explanations and solutions demonstrate strong evidence of ability to solve problems involving vector and matrix operations, modeling, and applications.	The candidate's explanations and solutions demonstrate strong evidence of ability to solve problems involving vector and matrix operations, modeling, and applications.
NCTM Content Standard A.2. Algebra To be prepared to develop student mathematical proficiency, all secondary mathematics teachers should know the following topics related to algebra with their content understanding and mathematical practices supported by appropriate technology and concrete models:			
NCTM Content Standard A.2. Algebra *Indicator* A.2.1 Algebraic notation, symbols, expressions, equations, inequalities, and proportional relationships, and their use in describing, interpreting, modeling, generalizing, and justifying relationships and operations	The candidate's explanations and solutions show little or no evidence of ability to solve problems involving Algebraic notation, symbols, expressions, equations, inequalities, and proportional relationships, and their use in describing, interpreting, modeling, generalizing, and justifying relationships and operations.	The candidate's explanations and solutions show some evidence of ability to solve problems involving Algebraic notation, symbols, expressions, equations, inequalities, and proportional relationships, and their use in describing, interpreting, modeling, generalizing, and justifying relationships and operations.	The candidate's explanations and solutions show strong evidence of ability to correctly solve problems involving Algebraic notation, symbols, expressions, equations, inequalities, and proportional relationships, and their use in describing, interpreting, modeling, generalizing, and justifying relationships and operations.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Content Standard A.2. Algebra *Indicator* A.2.2 Function classes including polynomial, exponential and logarithmic, absolute value, rational, trigonometric, and discrete and how the choices of parameters determine particular cases and model specific situations	The candidate's explanations and solutions show little or no evidence of ability to apply fundamental ideas of functions including polynomial, exponential and logarithmic, absolute value, rational, trigonometric, and discrete and how the choices of parameters determine particular cases and model specific situations.	The candidate's explanations and solutions show some evidence of ability to apply fundamental ideas of functions including polynomial, exponential and logarithmic, absolute value, rational, trigonometric, and discrete and how the choices of parameters determine particular cases and model specific situations.	The candidate's explanations and solutions show strong evidence of ability to apply fundamental ideas of functions including polynomial, exponential and logarithmic, absolute value, rational, trigonometric, and discrete and how the choices of parameters determine particular cases and model specific situations.
NCTM Content Standard A.2. Algebra *Indicator* A.2.3 Functional representations (tables, graphs, equations, descriptions, recursive definitions, and finite differences) and notations as a means to describe, interpret, and analyze relationships and to build new functions	The candidate's explanations and solutions show little or no evidence of ability to solve problems involving functional representations (tables, graphs, equations, descriptions, recursive definitions, and finite differences) and notations as a means to describe, interpret, and analyze relationships, and to build new functions.	The candidate's explanations and solutions show some evidence of ability to solve problems involving functional representations (tables, graphs, equations, descriptions, recursive definitions, and finite differences) and notations as a means to describe, interpret, and analyze relationships and to build new functions..	The candidate's explanations and solutions show strong evidence of ability to correctly solve problems involving functional representations (tables, graphs, equations, descriptions, recursive definitions, and finite differences) and notations as a means to describe, interpret, and analyze relationships and to build new functions.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Content Standard A.2. Algebra *Indicator* A.2.4 Patterns of change in linear, quadratic, polynomial, and exponential functions and in proportional and inversely proportional relationships and types of real-world relationships these functions can model	The candidate's explanations and solutions show little or no evidence of ability to solve problems involving patterns of change in linear, quadratic, polynomial, and exponential functions and in proportional and inversely proportional relationships and types of real-world relationships these functions can model.	The candidate's explanations and solutions show some evidence of ability to solve problems involving patterns of change in linear, quadratic, polynomial, and exponential functions and in proportional and inversely proportional relationships and types of real-world relationships these functions can model.	The candidate's explanations and solutions show strong evidence of ability to correctly solve problems involving patterns of change in linear, quadratic, polynomial, and exponential functions and in proportional and inversely proportional relationships and types of real-world relationships these functions can model.
NCTM Content Standard A.3. Geometry and Trigonometry			
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.1 Core concepts and principles of Euclidean and non-Euclidean geometries in two and three dimensions	The candidate's explanations and solutions show little or no evidence of ability to recognize and use core concepts and principles of Euclidean and non-Euclidean geometries in two- and three-dimensions.	The candidate's explanations and solutions show some evidence of the ability to recognize and use core concepts and principles of Euclidean and non-Euclidean geometry in two- and three-dimensions.	The candidate's explanations and solutions show strong evidence of ability to recognize and use core concepts and principles of Euclidean and non-Euclidean geometry in two- and three-dimensions.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.2 Transformations including dilations, translations, rotations, reflections, glide reflections; compositions of transformations; and the expression of symmetry in terms of transformations	The candidate's explanations and solutions show little or no evidence of ability to apply transformations.	The candidate's explanations and solutions show some evidence of the ability to apply transformations.	The candidate's explanations and solutions show strong evidence of ability to apply transformations.
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.3Congruence, similarity and scaling, and their development and expression in terms of transformations	The candidate's explanations and solutions show little or no evidence of ability and use symmetry, similarity, and congruence to analyze mathematical situations.	The candidate's explanations and solutions show some evidence of ability to and use symmetry, similarity, and congruence to analyze mathematical situations.	The candidate's explanations and solutions show strong evidence of ability to use symmetry, similarity, and congruence to analyze mathematical situations.
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.4 Right triangles and trigonometry	The candidate's explanations and solutions show little or no evidence of ability to recognize and use right triangles and trigonometry when solving problems.	The candidate's explanations and solutions show some evidence of ability to recognize and use right triangles and trigonometry when solving problems.	The candidate's explanations and solutions show strong evidence of ability to recognize and use right triangles and trigonometry when solving problems.
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.5Application of periodic phenomena and trigonometric	The candidate's explanations and solutions show little or no evidence of ability to use periodic phenomena as it applies to trigonometry.	The candidate's explanations and solutions show some evidence of ability to use periodic phenomena as it applies to trigonometry.	The candidate's explanations and solutions show strong evidence of ability to use periodic phenomena as it applies to trigonometry.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.6Identification, classification into categories, visualization, and representation of two- and three-dimensional objects (triangles, quadrilaterals, regular polygons, prisms, pyramids, cones, cylinders, and spheres)	The candidate's explanations and solutions show little or no evidence of identification, classification, visualization, and representation of two- and three-dimensional objects.	The candidate's explanations and solutions show some evidence of identification, classification, visualization, and representation of two- and three-dimensional objects.	The candidate's explanations and solutions show strong evidence of identification, classification, visualization, and representation of two- and three-dimensional objects.
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.7 Formula rationale and derivation (perimeter, area, surface area, and volume) of two- and three-dimensional objects (triangles, quadrilaterals, regular polygons, rectangular prisms, pyramids, cones, cylinders, and spheres), with attention to units, unit comparison, and the iteration, additivity, and invariance related to measurements	The candidate's explanations and solutions show little or no evidence of ability to recognize the common representations and uses of measurement and choose tools and units for measuring. The candidate's explanations and solutions show little or no evidence of ability to apply appropriate techniques, tools, and formulas to determine measurements and their application in a variety of contexts.	The candidate's explanations and solutions show some evidence of ability to recognize common representations and uses of measurement and choose tools and units for measuring. The candidate's explanations and solutions show little or no evidence of ability to apply appropriate techniques, tools, and formulas to determine measurements and their application in a variety of contexts.	The candidate's explanations and solutions show strong evidence of ability to: recognize common representations and uses of measurement and choose tools and units for measuring. The candidate's explanations and solutions show little or no evidence of ability to apply appropriate techniques, tools, and formulas to determine measurements and their application in a variety of contexts.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.8 Geometric constructions, axiomatic reasoning, and proof	The candidate's explanations and solutions show little or no evidence of ability to solve problems involving geometric constructions, axiomatic reasoning, and proof.	The candidate's explanations and solutions show some evidence of ability to solve problems involving geometric constructions, axiomatic reasoning, and proof.	The candidate's explanations and solutions show strong evidence of the ability to correctly solve problems involving geometric constructions, axiomatic reasoning, and proof.
NCTM Content Standard A.3. Geometry and Trigonometry *Indicator* A.3.9Analytic and coordinate geometry including algebraic proofs (e.g., the Pythagorean Theorem and its converse) and equations of lines and planes, and expressing geometric properties of conic sections with equations	The candidate's explanations and solutions show little or no evidence of ability to solve problems involving analytic and coordinate geometry including algebraic proofs (e.g., the Pythagorean Theorem and its converse) and equations of lines and planes, and expressing geometric properties of conic sections with equations	The candidate's explanations and solutions show some evidence of ability to solve problems involving analytic and coordinate geometry including algebraic proofs (e.g., the Pythagorean Theorem and its converse) and equations of lines and planes, and expressing geometric properties of conic sections with equations.	The candidate's explanations and solutions show strong evidence of the ability to correctly solve problems involving analytic and coordinate geometry including algebraic proofs (e.g., the Pythagorean Theorem and its converse) and equations of lines and planes, and expressing geometric properties of conic sections with equations.
NCTM Content Standard A.4. Statistics, and Probability			
NCTM Content Standard A.4. Statistics, and Probability*Indicator* A.4.1Statistical variability and its sources and the role of randomness in statistical inference	The candidate's explanations and solutions show little or no evidence of ability to solve problems involving statistical variability and its sources and the role of randomness in statistical inference.	The candidate's explanations and solutions show some evidence of ability to solve problems involving statistical variability and its sources and the role of randomness in statistical inference.	The candidate's explanations and solutions show strong evidence of the ability to correctly solve problems involving statistical variability and its sources and the role of randomness in statistical inference.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Content Standard A.4. Statistics, and Probability*Indicator* A.4.2 Creation and implementation of surveys and investigations using sampling methods and statistical designs, statistical inference (estimation of population parameters and hypotheses testing), justification of conclusions, and generalization of results	The candidate's explanations and solutions show little or no evidence of ability to create and implement surveys and investigations using sampling methods and statistical designs, statistical inference, and to justify results.	The candidate's explanations and solutions show some evidence of ability to create and implement surveys and investigations using sampling methods and statistical designs, statistical inference, and to justify results.	The candidate's explanations and solutions show strong evidence of the ability to create and implement surveys and investigations using sampling methods and statistical designs, statistical inference, and to justify results.
NCTM Content Standard A.4. Statistics, and Probability*Indicator* A.4.3Construction and interpretation of graphical displays of univariate data distributions (e.g., box plots, histograms, and cumulative frequency plots); summary measures and comparison of distributions of univariate data; and exploration of bivariate and categorical data	The candidate's explanations and solutions show little or no evidence of ability to solve problems involving construction and interpretation of graphical displays of univariate data distributions (e.g., box plots, histograms, and cumulative frequency plots); summary measures and comparison of distributions of univariate data; and exploration of bivariate and categorical data.	The candidate's explanations and solutions show some evidence of ability to solve problems involving construction and interpretation of graphical displays of univariate data distributions (e.g., box plots, histograms, and cumulative frequency plots); summary measures and comparison of distributions of univariate data; and exploration of bivariate and categorical data.	The candidate's explanations and solutions show strong evidence of the ability to correctly solve problems involving construction and interpretation of graphical displays of univariate data distributions (e.g., box plots, histograms, and cumulative frequency plots); summary measures and comparison of distributions of univariate data; and exploration of bivariate and categorical data.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Content Standard A.4. Statistics, and Probability*Indicator* A.4.4Empirical and theoretical probability (discrete, continuous, and conditional) for both simple and compound events	The candidate's explanations and solutions provide little or no evidence of ability to solve problems involving empirical and theoretical probability (discrete, continuous, and conditional) for both simple and compound events.	The candidate's explanations and solutions provide some evidence of ability to solve problems involving empirical and theoretical probability (discrete, continuous, and conditional) for both simple and compound events.	The candidate's explanations and solutions provide strong evidence of ability to correctly solve problems involving empirical and theoretical probability (discrete, continuous, and conditional) for both simple and compound events.
NCTM Content Standard A.4. Statistics, and Probability*Indicator* A.4.5 Random (chance) phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making	The candidate's explanations and solutions provide little or no evidence of ability to solve problems involving random (chance) phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making.	The candidate's explanations and solutions provide some evidence of ability to solve problems involving random (chance) phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making.	The candidate's explanations and solutions provide strong evidence of ability to correctly solve problems involving random (chance) phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making.
NCTM Standard A.5.Calculus			
NCTM Standard A.5.Calculus *Indicator* A.5.1 Limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration	The candidate's explanations and solutions show little or no understanding of and procedural facility with limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration.	The candidate's explanations and solutions show partial understanding of and procedural facility with limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration.	The candidate's explanations and solutions show strong evidence of conceptual understanding of and procedural facility with limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration.

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Standard A.5.Calculus *Indicator* A.5.2Parametric, polar, and vector functions	The candidate's explanations and solutions show little or no evidence of conceptual understanding of and procedural facility with Parametric, polar, and vector functions.	The candidate's explanations and solutions show some evidence of conceptual understanding of and procedural facility with Parametric, polar, and vector functions.	The candidate's explanations and solutions show strong evidence ofconceptual understanding of and procedural facility with Parametric, polar, and vector functions.
NCTM Standard A.5.Calculus *Indicator* A.5.3Sequences and series	The candidate's explanations and solutions show little or no evidence of conceptual understanding of and procedural facility with sequences and series.	The candidate's explanations and solutions show some evidence of conceptual understanding of and procedural facility with sequences and series.	The candidate's explanations and solutions show strong evidence of conceptual understanding of and procedural facility with sequences and series.
NCTM Standard A.5.Calculus *Indicator* A.5.4Multivariate functions	The candidate's explanations and solutions show little or no evidence of conceptual understanding of and procedural facility with multivariate functions.	The candidate's explanations and solutions show some evidence of conceptual understanding of and procedural facility with multivariate functions.	The candidate's explanations and solutions show strong evidence of conceptual understanding of and procedural facility with multivariate functions.
NCTM Standard A.5.Calculus *Indicator* A.5.5 Applications of function, geometry, and trigonometry concepts to solve problems involving calculus	The candidate's explanations and solutions show little or no evidence of ability to apply the concept of function, geometry, and trigonometry in solving problems in calculus.	The candidate's explanations and solutions show some evidence of ability to apply the concept of function, geometry, and trigonometry in solving problems in calculus.	The candidate's explanations and solutions show strong evidence of ability to apply the concept of function, geometry, and trigonometry in solving problems in calculus.
NCTM Standard A.6.Discrete Mathematics			

Element	Not Met (0)	Met (4)	Exceeded (5)
NCTM Standard A.6.Discrete Mathematics *Indicator* A.6.1 Discrete structures including sets, relations, functions, graphs, trees, and networks	The candidate's explanations and solutions show little or no understanding of basic elements of discrete mathematics.	The candidate's explanations and solutions demonstrate some understanding of basic elements of discrete mathematics.	The candidate's explanations and solutions demonstrate a strong understanding of basic elements of discrete mathematics.
NCTM Standard A.6.Discrete Mathematics *Indicator* A.6.2Enumeration including permutations, combinations, iteration, recursion, and finite differences	The candidate's explanations and solutions show little or no understanding of enumeration: permutations, combinations, iteration, recursion, and finite differences.	The candidate's explanations and solutions demonstrate some understanding of enumeration: permutations, combinations, iteration, recursion, and finite differences.	The candidate's explanations and solutions demonstrate a strong understanding of enumeration: permutations, combinations, iteration, recursion, and finite differences.
NCTM Standard A.6.Discrete Mathematics *Indicator* A.6.3Propositional and predicate logic	The candidate's explanations and solutions show some evidence of ability to solve problems involving propositional and predicate logic.	The candidate's explanations and solutions provide some evidence of ability to solve problems involving propositional and predicate logic.	The candidate's explanations and solutions provide strong evidence of ability to solve problems involving propositional and predicate logic.
NCTM Standard A.6.Discrete Mathematics *Indicator* A.6.4Applications of discrete structures such as modeling and solving linear programming problems and designing data structures	The candidate's explanations and solutions provide little or no evidence of application of discrete structures such as modeling and solving linear programming problems and designing data structures.	The candidate's explanations and solutions provide some evidence of application of discrete structures such as modeling and solving linear programming problems and designing data structures.	The candidate's explanations and solutions provide strong evidence of application of discrete structures such as modeling and solving linear programming problems and designing data structures.

Student Score on this rubric: _____ **Student Grade: _____**

First Attempt Date: _____
Improvements Needed/Comments:
Critical Task Remediation:
The instructor rates each competency demonstrated in the critical task as "Exceeded," "Met," or "Not Met" the expected level of mastery. Any critical task rated as "Not Met" requires the student to undergo

remediation at the course level with the instructor. Students are provided with two other opportunities during the course to remediate the assignment. Failure to meet expectations at the completion of the course, the instructor will issue an incomplete for the course while remediation is completed. After successful remediation, the instructor submits a Change of Grade Form. ***Successful remediation must be completed by the teacher candidate prior to receiving the final grade for the course.Please note that the grade for the critical task is revised as a result of remediation, but the course grade reverts from an incomplete to the original grade earned.*** Since this assignment is a critical task, the teacher candidate places the original assignment and all remediation efforts in the Portfolio for review.

Second Attempt Date: _____ **Pass/Fail**
Third Attempt Date: _____ **Pass/Fail**

_____ _____ _____
Instructor's Signature **Instructor's Typed Name** **Date**

Critical Task SECE 4350 – Methods of Teaching Middle and Secondary Mathematics
Key Assessment
Appendix C
SECE 4350 – Methods of Teaching Middle and Secondary Mathematics
Rubric for Instructional Design/Unit and Lesson Plans

This assignment will be graded using the following Scoring Rubric
Gradations of Quality:
Exceeded Standards: Thinking is logical, easy to follow, and well supported. The work is virtually error free. All criteria are met.
Met Standards: Thinking shows thought flows fairly well, and support is evident. The work may have a few errors. Most criteria are met; some criteria may be partially met.
Not Met Standards: Thinking may show flaws, flow may have problems, and support may be lacking. The work may have a number of errors. Some criteria are met; others may be partially met and/or missing. The work fails to meet the standards set forth in the assignment.
:

Element	Not Met	Met	Exceeded
Organization of the unit **NCTM Standard 2: Mathematical Practices *Indicator* 2d** Organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences	The unit plan does not provide evidence that the candidate has the ability to organize and use the language of mathematics to communicate their thinking to all students.	The unit plan provides adequate evidence that the candidate has the ability to organize and use the language of mathematics to communicate their thinking to all students.	The unit plan provides substantial evidence that the candidate has the ability to organize and use the language of mathematics to communicate their thinking to all students.
Organization of the unit **NCTM Standard 2: Mathematical Practices *Indicator* 2e** Demonstrate the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts.	The unit plan does not provide evidence that the candidate understands the interconnectedness of mathematical ideas and applies this knowledge in various contexts.	The unit plan provides adequate evidence that the candidate understands the interconnectedness of mathematical ideas and applies this knowledge in various contexts.	The unit plan provides substantial evidence that the candidate understands the interconnectedness of mathematical ideas and applies this knowledge in various contexts.

Element	Not Met	Met	Exceeded
Organization of the unit **NCTM Standard 4: Mathematical Learning Environment** ***Indicator*** **4a** Exhibit knowledge of adolescent learning, development, and behavior and demonstrate a positive disposition toward mathematical processes and learning.	The unit plan does not provide evidence that the candidate has knowledge of adolescent learning, development, and behavior.	The unit plan provides adequate evidence that the candidate has knowledge of adolescent learning, development, and behavior.	The unit plan provides evidence that the candidate has knowledge of adolescent learning, development, and behavior and demonstrates a positive disposition toward mathematical processes and learning.
Organization of the unit **NCTM Standard 4: Mathematical Learning Environment** ***Indicator*** **4b** Plan and create developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.	The unit plan does not provide evidence that the candidate can plan and create, research-based, developmentally appropriate, sequential, and challenging learning opportunities that actively engage students in lessons that build on prior knowledge and experiences.	The unit plan provides adequate evidence that the candidate can plan and create, research-based, developmentally appropriate, sequential, and challenging learning opportunities that actively engage students in lessons that build on prior knowledge and experiences.	The unit plan provides substantial evidence that the candidate can plan and create, research-based, developmentally appropriate, sequential, and challenging learning opportunities that actively engage students in lessons that build on prior knowledge and experiences.

Element	Not Met	Met	Exceeded
Organization of the unit **NCTM Standard 4: Mathematical Learning Environment** ***Indicator*** **4e** Apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools.	The unit plan does not provide evidence that the candidate has the ability to develop lessons that integrate mathematics specific technology to develop understanding of mathematical concepts.	The unit plan provides adequate evidence that the candidate has the ability to develop lessons that integrate mathematics specific technology to develop understanding of mathematical concepts.	The unit plan provides substantial evidence that the candidate has the ability to develop lessons that integrate mathematics specific technology to develop understanding of mathematical concepts.
Unit objectives **NCTM Standard 2: Mathematical Practices** ***Indicator*** **2f** Model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing.	The unit plan does not provide evidence that the candidate has the ability to develop unit objectives that reflect the interconnectedness of mathematical concepts within and among the respective content strands.	The unit plan provides adequate evidence that the candidate has the ability to develop unit objectives that reflect the interconnectedness of mathematical concepts within and among the respective content strands.	The unit plan provides substantial evidence that the candidate has the ability to develop unit objectives that reflect the interconnectedness of mathematical concepts within and among the respective content strands.

Element	Not Met	Met	Exceeded
Alignment of standards **NCTM Standard 3: Content Pedagogy** ***Indicator*** **3a** Apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.	The candidate has not demonstrated the ability to plan lessons or a unit that address appropriate learning goals, including those that address local, state, and national mathematics standards.	The candidate has demonstrated the ability to plan lessons, and a unit that address appropriate learning goals, including those that address local, state, and national mathematics standards.	The candidate has exceeded expectations in planning lessons, and a unit that address appropriate learning goals, including those that address local, state, and national mathematics standards.
Evidence of pre-planning by research **NCTM Standard 3: Content Pedagogy** ***Indicator*** **3c** Plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.	The candidate has not demonstrated the ability to incorporate knowledge of research results in the teaching and learning of mathematics.	The candidate has demonstrated the ability to incorporate knowledge of research results in the teaching and learning of mathematics.	The candidate has exceeded expectations by demonstrating proficiency in appropriately incorporating knowledge of research results in the teaching and learning of mathematics.
Evidence of pre-planning by research **NCTM Standard 3: Content Pedagogy** ***Indicator*** **3c** Plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.	The candidate has not demonstrated the ability to incorporate knowledge of research results in the teaching and learning of mathematics.	The candidate has demonstrated the ability to incorporate knowledge of research results in the teaching and learning of mathematics.	The candidate has exceeded expectations by demonstrating proficiency in appropriately incorporating knowledge of research results in the teaching and learning of mathematics.

Element	Not Met	Met	Exceeded
Differentiation of instruction **NCTM Standard 3: Content Pedagogy *Indicator* 3c** Plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.	The candidate has not demonstrated throughout the unit of work and lesson plans knowledge of different types of instructional strategies.	The candidate has demonstrated throughout the unit of work and lesson plans some knowledge of different types of instructional strategies.	The candidate has exceeded expectations by clearing indicating throughout the unit of work and lesson plans knowledge of different types of instructional strategies.
Differentiation of instruction **NCTM Standard 3: Content Pedagogy *Indicator* 3d** Provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.	The candidate has not demonstrated, throughout the unit of work and lesson plans, the ability to provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.	The candidate has demonstrated, throughout the unit of work and lesson plans, the ability to provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.	The candidate has exceeded expectations by demonstrating, throughout the unit of work and lesson plans, the ability to provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.
Differentiation of instruction **NCTM Standard 3: Content Pedagogy *Indicator* 3e** Implement techniques related to student engagement and communication including selecting high quality tasks, guiding mathematical discussions, identifying key mathematical ideas, identifying and addressing student misconceptions, and employing a range of questioning strategies.	The candidate has not implement techniques related to student engagement and communication throughout the unit of work and lesson plans.	The candidate has implement techniques related to student engagement and communication throughout the unit of work and lesson plans.	The candidate has exceeded in implementing techniques related to student engagement and communication throughout the unit of work and lesson plans.

Element	Not Met	Met	Exceeded
Differentiation of instruction **NCTM Standard 4: Mathematical Learning Environment *Indicator*** **4c** Incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.	The candidate has not demonstrated the ability to select, use, or determine suitability of the wide variety of available mathematics curricula to meet learning styles of PreK-12 student(s) of differing cultures in mainstream classes, including students with diverse learning needs.	The candidate has demonstrated the ability to select, use, or determine suitability of the wide variety of available mathematics curricula to meet learning styles of PreK-12 student(s) of differing cultures in mainstream classes, including students with diverse learning needs.	The candidate has exceeded expectations by selecting, using, and determining suitability of the wide variety of available mathematics curricula to meet learning styles of PreK-12 student(s) of differing cultures in mainstream classes, including students with diverse learning needs.
Differentiation of instruction **NCTM Standard 4: Mathematical Learning Environment *Indicator*** **4d** Demonstrate equitable and ethical treatment of and high expectations for all students.	The candidate did not recognize equity issues when selecting, using, and determining suitability of materials and activities.	The candidate has provided some evidence of the ability to pay attention to equity issues when selecting, using, and determining suitability of materials and activities.	The candidate has exceeded expectations by paying attention to equity issues when selecting, using, and determining suitability of materials and activities.

Element	Not Met	Met	Exceeded
Differentiation of instruction **NCTM Standard 4: Mathematical Learning Environment** ***Indicator*** **4e** Apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools.	The candidate did not apply mathematical content and pedagogical knowledge to select and use instructional tools including the use of technology.	The candidate has applied mathematical content and pedagogical knowledge to select and use instructional tools including the use of technology.	The candidate has exceeded expectations by applying mathematical content and pedagogical knowledge in selecting and using instructional tools including the use of technology.
Differentiation of instruction ***Indicator*** **5a** Verify that secondary students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics; and the application of mathematics in a variety of contexts within major mathematical domains.	The candidate did not verify that secondary students demonstrate the conceptual understanding and application of variety of context within the major mathematical domains.	The candidate has verified that secondary students demonstrate the conceptual understanding and application of variety of context within the major mathematical domains.	The candidate has exceeded expectations by verifying that secondary students demonstrate the conceptual understanding and application of variety of context within the major mathematical domains.

Element	Not Met	Met	Exceeded
Assessment **NCTM Standard 3: Content Pedagogy *Indicator* 3f** Plan, select, implement, interpret, and use formative and summative assessments to inform instruction by reflecting on mathematical proficiencies essential for all students.	The candidate has not demonstrated the ability to use multiple types of assessment information to adjust instruction and enhance ongoing learning progress.	The candidate has demonstrated the ability to use multiple types of assessment information to adjust instruction and enhance ongoing learning progress.	The candidate has exceeded expectations in demonstrating proficiency in using multiple types of assessment information to adjust instruction and enhance ongoing learning progress.
Assessment **NCTM Standard 3: Content Pedagogy *Indicator* 3g** Monitor students' progress, make instructional decisions, and measure students' mathematical understanding and ability using formative and summative assessments.	The candidate has not demonstrated the ability to provide multiple evidence of using both formative and summative assessments to monitor student progress, and measure their mathematical understanding.	The candidate has demonstrated the ability to provide multiple evidence of using both formative and summative assessments to monitor student progress, and measure their mathematical understanding.	The candidate has exceeded competency by providing multiple evidence of using both formative and summative assessments to monitor student progress, and measure their mathematical understanding.
Technology **NCTM Standard 5: Impact on Student Learning *Indicator* 5b** Engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.	The candidate has not demonstrated the ability to provide opportunities for students to engage in developmentally appropriate mathematical activities, including the use of mathematics-specific technology in building new knowledge.	The candidate has demonstrated the ability to provide opportunities for students to engage in developmentally appropriate mathematical activities, including the use of mathematics-specific technology in building new knowledge.	The candidate has exceeded competency in providing opportunities for students to engage in developmentally appropriate mathematical activities, including the use of mathematics-specific technology in building new knowledge.

Element	Not Met	Met	Exceeded
NCTM Standard 4: Mathematical Learning Environment Indicator 4e Apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools.	The candidate has not demonstrated the ability to use or select appropriate math-specific technology tools: (spreadsheets, dynamic graphing tools, computer algebra systems, dynamic statistical packages, graphing calculators, etc.)	The candidate has demonstrated the ability to use or select appropriate math-specific technology tools: (spreadsheets, dynamic graphing tools, computer algebra systems, dynamic statistical packages, graphing calculators, etc.)	The candidate has exceeded competency in using or selecting appropriate math-specific technology tools: (e.g., spreadsheets, dynamic graphing tools, computer algebra systems, dynamic statistical packages, graphing calculators, etc.)

Grade:

Comments:

_____ _____ _____

Instructor's Signature **Instructor's Typed Name** **Date**

Appendix C
SECE 4350: Methods of Teaching Middle & Secondary Mathematics
Rubric for Assignment 3: Mathematics Problem-Solving Tasks and Presentations to Faculty, Peers, and P-12 Students

This assignment will be graded using the following Scoring Rubric
Gradations of Quality:
Exceeded Standards: Thinking is logical, easy to follow, and well supported. The work is virtually error free. All criteria are met.
Met Standards: Thinking shows thought flows fairly well, and support is evident. The work may have a few errors. Most criteria are met; some criteria may be partially met.
Not Met Standards: Thinking may show flaws, flow may have problems, and support may be lacking. The work may have a number of errors. Some criteria are met; others may be partially met and/or missing. The work fails to meet the standards set forth in the assignment.

Part 1 – The TaskNCTM 2a, 2b, 2c, 2d, 2e, 2f, 4e, A.1.1, A.2.4, A.2.5, A.2.6, A.3.7, A.3.8, A.3.9, A.4.2, A.4.3, A.4.4, A.4.5, A.5.1, A.5.3, A.5.4, A.5.5			
Element	**Not Met79% or below**	**Met80% - 89%**	**Exceeded90% - 100%**
NCTM 2a Use problem solving to develop conceptual understanding, make sense of a wide variety of problems and persevere in solving them, apply and adapt a variety of strategies in solving problems confronted within the field of mathematics and other contexts, and formulate and test conjectures in order to frame generalizations.	The candidate has demonstrated little or no evidence of the ability to persevere in problem solving.	The candidate has demonstrated competency in the ability to use a variety of strategies to persevere in problem solving in multiple contexts.	The candidate has exceeded expectations in being able to use and adapt a variety of strategies to persevere in problem solving in a variety of contexts while demonstrating conceptual understanding.

NCTM 2b Reason abstractly, reflectively, and quantitatively with attention to units, constructing viable arguments and proofs, and critiquing the reasoning of others; represent and model generalizations using mathematics; recognize structure and express regularity in patterns of mathematical reasoning; use multiple representations to model and describe mathematics; and utilize appropriate mathematical vocabulary and symbols to communicate mathematical ideas to others.	The candidate has demonstrated little or no ability to reason abstractly, develop and analyze reasoning, or use multiple representations to communicate mathematical ideas.	The candidate has demonstrated competency in their ability to reason abstractly, develop and analyze reasoning, and use multiple representations to communicate mathematical ideas.	The candidate has exceeded expectations with respect to their ability to reason abstractly, develop and analyze reasoning, and use multiple representations to communicate mathematical ideas effectively.
NCTM 2c Formulate, represent, analyze, and interpret mathematical models derived from real-world contexts or mathematical problems.	The candidate has demonstrated little or no evidence of the ability to formulate, represent, analyze, and interpret mathematical models in real world contexts.	The candidate has demonstrated competency of the ability to formulate, represent, analyze, and interpret mathematical models in real world contexts.	The candidate exceeded expectations with respect to their ability to formulate, represent, analyze, and interpret mathematical models in real world contexts.
NCTM 2d Organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.	The candidate has shown no evidence of the ability to organize and express their mathematical ideas both orally and in writing.	The candidate has demonstrated competency with respect to their ability to organize and express their mathematical ideas both orally and in writing.	The candidate has exceeded expectations with respect to their ability to organize and express their mathematical ideas both orally and in writing.

NCTM 2e Demonstrate the interconnectedness of mathematical ideas and how they build on one another and recognize and apply mathematical connections among mathematical ideas and across various content areas and real-world contexts.	The candidate has shown little or no evidence of the ability to connect and apply mathematical ideas in a variety of contexts.	The candidate has demonstrated competency of the ability to connect and apply mathematical ideas in a variety of contexts.	The candidate has exceeded expectations of the ability to connect and apply mathematical ideas in a variety of contexts.
NCTM 2f Model how the development of mathematical understanding within and among mathematical domains intersects with the mathematical practices of problem solving, reasoning, communicating, connecting, and representing.	The candidate has shown little or no evidence of the ability to model the connections between mathematical understanding and practices.	The candidate has demonstrated competency of the ability to model the connections between mathematical understanding and practices.	The candidate has exceeded expectations of the ability to model the connections between mathematical understanding and practices.
NCTM 4e Apply mathematical content and pedagogical knowledge to select and use instructional tools such as manipulatives and physical models, drawings, virtual environments, spreadsheets, presentation tools, and mathematics-specific technologies (e.g., graphing tools, interactive geometry software, computer algebra systems, and statistical packages); and make sound decisions about when such tools enhance teaching and learning, recognizing both the insights to be gained and possible limitations of such tools.	The candidate has shown little or no evidence of the ability to use mathematics specific instructional tools.	The candidate has demonstrated competency with respect to the ability to use mathematics specific instructional tools.	The candidate has exceeded expectations with respect to the ability to use mathematics specific instructional tools.

NCTM A.1.1 Structure, properties, relationships and operations on various types of numbers and number systems including integers, rationals, irrationals, reals, and complex numbers	The candidate has shown little or no evidence of using, performing operations with, and applying matrices.	The candidate has demonstrated competency in using, performing operations with, and applying matrices.	The candidate has exceeded expectations in using, performing operations with, and applying matrices.
NCTM A.2.4 Patterns of change in quadratic functions and types of real-world relationships these functions can model	The candidate has shown little or no evidence of the ability to use quadratic functions to model and solve real world problems.	The candidate has demonstrated competency of the ability to use quadratic functions to model and solve real world problems.	The candidate has exceeded expectations of the ability to use quadratic functions to model and solve real world problems.
NCTM A.2.5 Linear algebra including vectors, matrices, and transformations	The candidate has shown little or no evidence of the ability to use quadratic functions to model and solve real world problems.	The candidate has demonstrated competency of the ability complete problems in Linear algebra including vectors, matrices, and transformations.	The candidate has exceeded expectations of the ability to complete problems in Linear algebra including vectors, matrices, and transformations.
NCTM A.2.6 Abstract algebra including groups, rings, and fields and the relationship between these structures and formal structures for number systems and numerical and symbolic calculations	The candidate has shown little or no evidence of the ability to apply the knowledge of abstract algebra skills including groups, rings, and fields.	The candidate has demonstrated competency of the ability to apply the knowledge of abstract algebra skills including groups, rings, and fields.	The candidate has exceeded expectations of the ability to apply the knowledge of abstract algebra skills including groups, rings, and fields.

NCTM A.3.7 Formula rationale and derivation (perimeter, area, surface area, and volume) of two-and three-dimensional objects (triangles, quadrilaterals, regular polygons, rectangular prisms, pyramids, cones, cylinders, and spheres), with attention to units, unit comparison, and the iteration, additivity, and invariance related to measurements.	The candidate's comparison of the volume of two cylinders does not demonstrate knowledge of formula rational and derivation of two and three dimensional objects.	The candidate's comparison of the volume of two cylinders demonstrates adequate knowledge of formula rational and derivation of two and three dimensional objects.	The candidate's comparison of the volume of two cylinders demonstrates thorough knowledge of formula rational and derivation of two and three dimensional objects.
NCTM A.3.8 Geometric constructions, axiomatic reasoning, and proof	The candidate did not demonstrate the ability to create constructions using dynamic geometry software (e.g., Sketchpad or Geogebra, software).	The candidate demonstrated an adequate ability to create constructions using dynamic geometry software (e.g., Sketchpad or Geogebra, software).	The candidate demonstrated advanced ability to create constructions using dynamic geometry software (e.g., Sketchpad or Geogebra, software).
NCTM A.3.9 Analytic and coordinate geometry including algebraic proofs (e.g., the Pythagorean Theorem and its converse) and equations of lines and planes, and expressing geometric properties of conic sections with equations	The candidate's proof of the Pythagorean Theorem has multiple errors.	The candidate's proof of the Pythagorean Theorem has some errors.	The candidate's proof of the Pythagorean Theorem is correct.

NCTM A.4.2 Creation and implementation of surveys and investigations using sampling methods and statistical designs, statistical inference (estimation of population parameters and hypotheses testing), justification of conclusions, and generalization of results	The candidate has shown little or no evidence in the ability to create and implement surveys and investigations using sampling methods and statistical designs, statistical inference, justification of conclusions, and generalization of results.	The candidate has demonstrated competency in the ability to create and implement surveys and investigations using sampling methods and statistical designs, statistical inference (estimation of population parameters and hypotheses testing), justification of conclusions, and generalization of results.	The candidate has exceeded expectations in the ability to create and implement surveys and investigations using sampling methods and statistical designs, statistical inference (estimation of population parameters and hypotheses testing), justification of conclusions, and generalization of results.
NCTM A.4.3 Univariate and bivariate data distributions for categorical data and for discrete and continuous random variables, including representations, construction and interpretation of graphical displays (e.g., box plots, histograms, cumulative frequency plots, scatter plots), summary measures, and comparisons of distributions	The candidate has shown little or no evidence of the ability to construct and interpret graphical displays of univariate data distributions (e.g., box plots, histograms, and cumulative frequency plots); summary measures and comparison of distributions of univariate data; and exploration of bivariate and categorical data.	The candidate has demonstrated competency of the ability to construct and interpret graphical displays of univariate data distributions (e.g., box plots, histograms, and cumulative frequency plots); summary measures and comparison of distributions of univariate data; and exploration of bivariate and categorical data.	The candidate has exceeded expectations of the ability to construct and interpret graphical displays of univariate data distributions (e.g., box plots, histograms, and cumulative frequency plots); summary measures and comparison of distributions of univariate data; and exploration of bivariate and categorical data.
NCTM A.4.4 Empirical and theoretical probability (discrete, continuous, and conditional) for both simple and compound events.	The candidate has shown little or no evidence of the ability to solve empirical and theoretical probability problems.	The candidate has demonstrated competency of the ability to solve empirical and theoretical probability problems.	The candidate has exceeded expectations of the ability to solve empirical and theoretical probability problems.

NCTM A.4.5 Random phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making	The candidate has shown little or no evidence of the ability to utilize random phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making.	The candidate has demonstrated competency of the ability to utilize random phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making.	The candidate has exceeded expectations of the ability to utilize random phenomena, simulations, and probability distributions and their application as models of real phenomena and to decision making.
NCTM A.5.1 Limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration	The candidate has shown little or no evidence of the ability to solve problems involving Limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration.	The candidate has demonstrated competency of the ability to solve problems involving Limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration.	The candidate has exceeded expectations of the ability to solve problems involving Limits, continuity, rates of change, the Fundamental Theorem of Calculus, and the meanings and techniques of differentiation and integration.
NCTM A.5.3 Sequences and series	The candidate has shown little or no evidence of the ability to solve sequences and series problems.	The candidate has demonstrated competency of the ability to solve sequences and series problems.	The candidate has exceeded expectations of the ability to solve sequences and series problems.
NCTM A.5.4 Multivariate Functions	The candidate has shown little or no evidence of the ability to solve multivariate problems.	The candidate has demonstrated competency of the ability to solve multivariate problems.	The candidate has exceeded expectations of the ability to solve multivariate problems.

NCTM A.5.5 Applications of function, geometry, and trigonometry concepts to solve problems involving calculus.	The candidate has shown little or no understanding of how to apply function, geometry, and trigonometry concepts to solve problems involving calculus.	The candidate has demonstrated competency in the applications of function, geometry, and trigonometry concepts to solve problems involving calculus.	The candidate has exceeded expectations of the ability to apply function, geometry, and trigonometry concepts to solve problems involving calculus.
Part 2: Field Experience Teaching Activity NCTM 2d, 3a, 3c, 3d, 3e, 3f, 3g, 4b, 4c, 4e, 5b, 5c, 7a			
NCTM 2d Organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.	The candidate has demonstrated little or no evidence of the ability to organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.	The candidate has demonstrated competency in the ability to organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.	The candidate has exceeded expectations in being able to organize mathematical thinking and use the language of mathematics to express ideas precisely, both orally and in writing to multiple audiences.
NCTM 3a Apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.	The candidate has demonstrated little or no evidence of the ability to apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.	The candidate has demonstrated competency in the ability to apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.	The candidate has exceeded expectations in being able to apply knowledge of curriculum standards for secondary mathematics and their relationship to student learning within and across mathematical domains.

NCTM 3c Plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.	The candidate has demonstrated little or no evidence of the ability to plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.	The candidate has demonstrated competency in the ability to plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.	The candidate has exceeded expectations in being able to plan lessons and units that incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.
NCTM 3d Provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.	The candidate has demonstrated little or no evidence of the ability to provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.	The candidate has demonstrated competency in the ability to provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.	The candidate has exceeded expectations in being able to provide students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.

NCTM 3e Implement techniques related to student engagement and communication including selecting high quality tasks, guiding mathematical discussions, identifying key mathematical ideas, identifying and addressing student misconceptions, and employing a range of questioning strategies.	The candidate has demonstrated little or no evidence of the ability to implement techniques related to student engagement and communication including selecting high quality tasks, guiding mathematical discussions, identifying key mathematical ideas, identifying and addressing student misconceptions, and employing a range of questioning strategies.	The candidate has demonstrated competency in the ability to implement techniques related to student engagement and communication including selecting high quality tasks, guiding mathematical discussions, identifying key mathematical ideas, identifying and addressing student misconceptions, and employing a range of questioning strategies.	The candidate has exceeded expectations in being able to implement techniques related to student engagement and communication including selecting high quality tasks, guiding mathematical discussions, identifying key mathematical ideas, identifying and addressing student misconceptions, and employing a range of questioning strategies.
NCTM 3f Plan, select, implement, interpret, and use formative and summative assessments to inform instruction by reflecting on mathematical proficiencies essential for all students.	The candidate has demonstrated little or no evidence of the ability to plan, select, implement, interpret, and use formative and summative assessments to inform instruction by reflecting on mathematical proficiencies essential for all students.	The candidate has demonstrated competency in the ability to plan, select, implement, interpret, and use formative and summative assessments to inform instruction by reflecting on mathematical proficiencies essential for all students.	The candidate has exceeded expectations in being able to plan, select, implement, interpret, and use formative and summative assessments to inform instruction by reflecting on mathematical proficiencies essential for all students.

NCTM 3g Monitor students' progress; make instructional decisions, and measure students' mathematical understanding and ability using formative and summative assessments.	The candidate has demonstrated little or no evidence of the ability to monitor students' progress; make instructional decisions, and measure students' mathematical understanding and ability using formative and summative assessments.	The candidate has demonstrated competency in the ability to monitor students' progress; make instructional decisions, and measure students' mathematical understanding and ability using formative and summative assessments.	The candidate has exceeded expectations in being able to monitor students' progress; make instructional decisions, and measure students' mathematical understanding and ability using formative and summative assessments.
NCTM 4b Plan and create developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.	The candidate has demonstrated little or no evidence of the ability to plan and create developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.	The candidate has demonstrated competency in the ability to plan and create developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.	The candidate has exceeded expectations in being able to plan and create developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.

NCTM 4c Incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.	The candidate has demonstrated little or no evidence of the ability to incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.	The candidate has demonstrated competency in the ability to incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.	The candidate has exceeded expectations in being able to incorporate knowledge of individual differences and the cultural and language diversity that exists within classrooms and include culturally relevant perspectives as a means to motivate and engage students.
NCTM 5b Engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.	The candidate has demonstrated little or no evidence of the ability to engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.	The candidate has demonstrated competency in the ability to engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.	The candidate has exceeded expectations in being able to engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.

NCTM 5c Collect, organize, analyze, and reflect on diagnostic, formative, and summative assessment evidence and determine the extent to which students' mathematical proficiencies have increased as a result of their instruction.	The candidate has demonstrated little or no evidence of the ability to collect, organize, analyze, and reflect on diagnostic, formative, and summative assessment evidence and determine the extent to which students' mathematical proficiencies have increased as a result of their instruction.	The candidate has demonstrated competency in the ability to collect, organize, analyze, and reflect on diagnostic, formative, and summative assessment evidence and determine the extent to which students' mathematical proficiencies have increased as a result of their instruction.	The candidate has exceeded expectations in being able to collect, organize, analyze, and reflect on diagnostic, formative, and summative assessment evidence and determine the extent to which students' mathematical proficiencies have increased as a result of their instruction.
NCTM 7a Engage in a sequence of planned field experiences ... prior to a full-time student teaching/internship experience that include observing and participating in both middle and high school mathematics classrooms and working with a diverse range of students individually, in small groups, and in large class settings under the supervision of experienced and highly qualified mathematics teachers...	The candidate has demonstrated little or no evidence of having engaged in a sequence of planned field experiences ... prior to a full-time student teaching/internship experience that include observing and participating in both middle and high school mathematics classrooms and working with a diverse range of students individually, in small groups, and in large class settings ...	The candidate has demonstrated evidence of having engaged in a sequence of planned field experiences ... prior to a full-time student teaching/internship experience that include observing and participating in both middle and high school mathematics classrooms and working with a diverse range of students individually, in small groups, and in large class settings ...	The candidate has provided ample evidence of having successfully engaged in a sequence of planned field experiences ... prior to a full-time student teaching/internship experience that include observing and participating in both middle and high school mathematics classrooms and working with a diverse range of students individually, in small groups, and in large class settings ...

Grade:
Comments:

_____ _____ _____

Instructor's Name **Instructor's Signature** **Date**

Teacher Candidate's Directions:

The teacher candidate must submit this rubric with the critical task in order to have it graded. An assignment without a rubric will not be graded. Be sure to address all of the criteria in order to meet the highest level of

proficiency.

Instructor's Directions:

This course assignment has been designated as a Key Assessment for which UTEP is collecting program data on the performance of the candidate. Please enter online the evaluation results on the specified criteria for each candidate's assignment.

Writing across the Curriculum Rubric					
Criteria	**Levels of Proficiency**				
	Didn't Meet			**Met**	**Exceeded**
	F(0-59)	**D(60-69)**	**C(70-79)**	**B(80-89)**	**A(90-100)**
A. Composition Uses well composed sentence & paragraph structure (e.g., wording, syntax, strong paragraphs) & correct vocabulary/education terms	**didn't meet college level standards**	**6+ errors per paper**	**4-5 errors per paper**	**2-3 errors per paper**	**0-1 errors per paper**
B. Grammar & Mechanics Uses correct grammar (e.g., active voice, tense, pronoun reference), mechanics (e.g., commas, semi-colons) & spelling	**didn't meet college level standards**	**13+ errors per page**	**9-12 errors per page**	**6-8 errors per page**	**0-5 errors per page**
C. APA Format Applies APA format (i.e., title page, spacing, page numbers, headings, citations & references)	**didn't meet APA standards**	**6+ errors per paper**	**4-5 errors per paper**	**2-3 errors per paper**	**0-1 errors per paper**
Writing Grade					

Weaknesses:

Key Assessment Remediation Directions:

1. The instructor of the course rates each competency/skill demonstrated in the assignment as "Does Not Meet," "Meets," or "Exceeds" the expected level of mastery on this critical task/key assessment rubric.
2. If the teacher candidate earns a grade of less than B- on this critical task/key assessment, the candidate must remediate the skills/competencies rated as "Does Not Meet" with the instructor of the course.
3. The teacher candidate earns the grade for the critical task/key assessment based on the work demonstrated in the original submission of the assignment. The grade for course is not revised as a result of successful remediation.
4. **Successful remediation must be completed by the teacher candidate within one eight-week term following completion of the course.**

Teacher Candidate's Signature: Date:

Instructor's Signature: **Date**

Course Syllabus Management Team

Lead Faculty: Sandra Trotman, PhD.
trotman@nova.edu