Course #:

Course Title: Fostering Middle Grades Teachers' Algebraic Thinking

Credit Hrs: 3

Term: FALL 2009

Course Meetings & Location: W, 5:00-7:50PM, EDU402

Prerequisite Courses: N/A

Course Fee: (if applicable) N/A

Instructor: Mourat Tchoshanov

Office Location: EDU612

Contact Info:
- Phone # 747-7668
- E-mail mouratt@utep.edu
- Fax # 747-7441
- Emergency Contact Lanna Tallmon – Dept. Admin. Secretary (ext. *6754)
- lanna@utep.edu

Office Hrs: W, 4:30-5:00PM & 7:50-8:20PM

Textbook(s), Materials:


SR - Selected Readings (distributed in the class)

Course Objectives (Learning Outcomes):

- Understand and be able to use algebra as a symbolic language, as a problem solving tool, as generalized arithmetic, as generalized quantitative reasoning, as a study of patterns, relations, functions, and variation, and as a way of modeling physical situations;
- Develop a profound understanding of variables and functions;
- Be able to make connections between different representations of a function: physical situation, graph, and algebraic formula;
- Understand linearity and how linear functions can illustrate proportional relationships;
- Recognize the role of proportional reasoning in aligning elementary, middle, and high school mathematics content, relate proportional reasoning to rate of change, slope, and linear functions;
- Demonstrate algebraic fluency and be able to give a rational for common algebraic procedures using connections and representations.
Course Activities/Assignments: Learning outcomes will be taught through the series of conceptually rich activities, students’ micro-teachings on content specific topics, students’ presentations on pedagogical content issues related to learning and teaching algebra in middle grades, pre-mid-and-post assessment of students’ content knowledge.

Assessment of Course Objectives: Learning outcomes will be assessed through the following assignments:

1. **Pre-mid-and-post tests**: each student will take pre-mid-and-post tests.

2. **Presentation** (25-30 min): each student or group of students will make a presentation on an assigned text. Key part of the presentation is a discussion on pros and cons of the presented issue. BE CRITICAL! Students should distribute outline (2-3 pages) of the presentation to the peers.

3. **Microteaching** (40-45 min): each student will present micro-lessons to their peers on a chosen activity on a given topic. Key part of the activity is pre-and-post assessment of peers’ knowledge. Student teacher must distribute the lesson plan (3-5 pages) with examples of classroom activities, teacher actions and anticipated student responses, pre-and-post tests/quizzes.

4. **Homework**: during the course of the class students will be assigned homework.

### Course Schedule:

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<th>Content</th>
<th>Reading Assignments</th>
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<td>08-26</td>
<td>Introduction. Pre-test</td>
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<tr>
<td>09-02</td>
<td>Quantities and Relationships</td>
<td>SSN – 12.1 DM-1</td>
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<td>09-09</td>
<td>Graphs and Symbols in Quantitative Relationships</td>
<td>SSN – 12.2 DM-2</td>
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<td>09-16</td>
<td>Understanding Slope</td>
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<td>09-23</td>
<td>Understanding Change: Distance/ Position - Time Graphs</td>
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<td>09-30</td>
<td>Motion Detector Activities</td>
<td>SSN – 13.2 DM-5</td>
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<td>10-07</td>
<td>Speed - Time Graphs</td>
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<td>10-14</td>
<td>Interpreting Graphs &amp; Common Graphing Errors</td>
<td>SSN – 13.4 &amp; 5 DM-7</td>
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<td>10-21</td>
<td>Mid-test</td>
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<td>10-28</td>
<td>Algebraic Symbolism &amp; Using Algebra to Solve Problems</td>
<td>SSN – 14.1 &amp; 2</td>
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<td>11-04</td>
<td>Average Speed and Weighted Averages</td>
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<td>11-11</td>
<td>Algebra as Generalized Arithmetic</td>
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<td>11-18</td>
<td>Numerical Patterns and Functions</td>
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<td>11-25</td>
<td>Uses of Functions &amp; Issues for Learning</td>
<td>SSN – 15.2 &amp; 3</td>
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<td>12-02</td>
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Grading Policy:  

**Grade Distribution:**  
- Participation/discussion: 10%  
- Pre-test: 5%  
- Presentation: 15%  
- Mid-test: 20%  
- Teaching Micro-Activity: 15%  
- Homework: 15%  
- Post-test: 20%  

**Grading Scale:**  
- 90 - 100 = A (Excellent)  
- 80 - 89 = B (Good)  
- 70 - 79 = C (Average)  
- 60 - 69 = D (Passing)  
- 0 - 59 = F (Failure)  

Make-up Policy:  
If you missed a major assignment (e.g., test, micro-teaching) you have to present a valid documentation in order to make it up.  

Attendance Policy:  
Only one excused absence (supported by proper documentation) is allowed. The second and third absences will impact the final grade. Four and more absences will result in W or F.  

Academic Integrity Policy:  

Civility Statement:  
Lateness to the class is strongly discouraged. Many sessions will begin with a group project/activity or classroom discussion. Your group will depend upon you to be present and prepared for the class. The schedule of assignments and classroom discussions may change over the course of the workshop. Any changes to the syllabus will be announced. It is recommended that participants exchange telephone numbers and/or e-mail addresses with a few of their peers.  

Disability Statement:  
If a student has or suspects she/he has a disability and needs an accommodation, he/she should contact the Disabled Student Services Office (DSSO) at 747-5148 or at <dss@utep.edu> or go to Room 106 Union East Building. The student is responsible for presenting to the instructor any DSS accommodation letters and instructions.  

Military Statement:  
If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact as soon as possible.