MTED 6310
Research Trends in Mathematics and Science Education
Summer 2016 (June 8 to July 31) – Syllabus

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

Instructor  Dr. Song An
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Phone  915-747-7616 (office)
Office Hours  T & R 2:35 pm–4:45 pm
Other time by appointment
Office  College of Education, EDUC 808
Class Time  T & R 5:30 pm – 8:20 pm
Education Building 201
On-line discussions and individual meetings throughout the semester

This syllabus is subject to change as needed. Any changes to the syllabus will be announced in class.

Course Description

This course will explore critical issues of the development of fundamental mathematical and scientific ideas. We will examine current trends in the research area of educational technology, having students engage literature to understand theoretical underpinnings of the field, current research projects in effect, and future trends as technology in learning evolves as a practice and as a research interest. The course uses foundational concepts of learning in the fields of psychology, sociology and educational research to understand critical implications of the current body of literature.

Course Objectives/Student Learning Outcomes

<table>
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<tr>
<th>Students enrolled in this section will have multiple academic goals to achieve:</th>
<th>Instructor will use following assessments to evaluate students’ learning outcomes</th>
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</thead>
</table>
| 1. Understand the seismic shifts and major trends in educational research | a. Course graded assignments  
b. Individual Meeting/Oral exams |
| 2. Analyze educational research in different decades and identify patterns | a. Course graded Assignments  
b. Research presentation |
| 3. Reflect on implications of the educational research on K-12 education | a. Course graded assignments |
| 4. Synthesize recent research with interdisciplinary and international vision | a. Course graded assignments  
b. Research presentations |
| 5. Develop mid and long-term personal research agenda to fit current research trend | a. Course graded assignments  
b. Individual Meeting/Oral exams |

Required Reading Recourse

Articles from academic journals—all three journals are accessible through the UTEP library website: http://libraryweb.utep.edu/
Attendance, Participation and Professionalism

Attendance of individuals in the class is required and unexcused absences will result in a grade reduction. University rules regarding absences will be followed for the required class meetings. There will be a student sign-in sheet at the beginning of each class. If a student misses a session, it is the responsibility of the student for knowing and completing all work required. Each attendance will count towards the final grade. Two tardies (including early leaves) will count as one absence. **More than two absences may result in a student earning one-letter grade lower in the course.**

Students are expected that students will attend all classes and actively participate in working on projects and class discussions. Students are expected to prepare for each class session. Lateness to class is strongly discouraged. With the emphasis on collegiality it is important that all group members be in class to contribute to the group’s effort in developing an understanding of what it means to teach mathematics effectively.

All students are expected to demonstrate the ethical and professional values associated with K-12 Level Education. It is critical teaching candidates adopt and exhibit a professional demeanor at each point in their teacher preparation. Evidence of professional dedication will be expected through all work during classes and practicum, seminar, internship, and clinical experiences. Credit for participation and professionalism will be part of the evaluation. **Wireless phone usage for irrelevant purposes of the course is strictly prohibited in class.**

Assignment Format and Late Assignments

All assignments must be submitted electronically unless specified. It is highly recommended you save all your work electronically and possibly a hardcopy for your records before turning it in. The following format is **required** for every assignment submitted. Deviating from the format may result in reduced points, returned paper, or rejection of the assignment completely. All assignments should be double spaced and typed with 12-point font; page numbers should be included if more than one pages. **You must label your assignment as you save it containing your name and the assignment name.** Only assignments submitted complete and on time will be considered for full credit. Without evidence that you were unavailable (sick) for the entire range of days, the assignment will be given a zero. Any assignments turned more than one week late (or the range of dates for submission) will receive zero points.

Policy on Academic Dishonesty

The University of Texas at El Paso prides itself on its standards of academic excellence. In all matters of intellectual pursuit, UTEP faculty and students must strive to achieve based on the quality of work produced by their individual. In the classroom and in all other academic activities, students are expected to uphold the highest standards of academic integrity. Any form of scholastic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. It is imperative, therefore, that all faculty, insist on adherence to these standards.

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, the
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submission for credit of any work or materials that are not attributable in whole or in part to another person, taking an examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOP) and available in the Office of the Dean of Students, may result in sanctions ranging from disciplinary probation, to failing grades on the work in question, to failing grades in the course, to suspension or dismissal among others.

Students with Special Needs

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

Course Requirement

Class Participation (5% of Course Points)

Your active participation in each class session is vital to your learning as well as to the learning of other students in the class. I expect you to attend all class meetings prepared for active, collaborative, participation during the session, whether it is whole group discussion, small group activity, or individual reflection. Preparation for class involves completion of assigned readings and tasks. Active participation includes, but is not limited to, the following: asking probing question about the reading assignments, making comments during class discussions, bringing relevant handouts, or journal articles to class for distribution to classmates, making recommendations for further reading on a topic under discussion, suggesting activities to enhance the investigation of issues in educational research, and being prepared to answer questions about assigned topics. If you are unable to attend a particular class session, please let the instructor know beforehand. You are responsible for contacting someone in the class to find out what transpired in your absence.

Role Play Online Discussions (20% of Course Points)

Act like one of your favorite scholar, based on his or her research philosophy that you perceived in assignment 1 & 2, you will prepare answers to our weekly discussion questions. Each week you will participate a series online discussions about strategies and issues in educational research process. You should post answers to each discussion questions (no less than 200 words), the answer should be brief, meaningful, well thought-out, and articulate. Post your first response by the due days and post your follow up responses in the following two days. Read all the postings of your peers, and interact with your peers in a positive manner. You will reply at least three of your classmates’ posts in a meaningful way.
Assignments

Assignment 1: Identify Trend in Educational Research (Part 1) (15% of Course Points)  
(6 pages excluding references and cover page, double-spaced, free style)  
You will find one of productive and active researchers with around 10 years working as a professor (who promoted as full professor within the past 3 years or with less academic experiences) in one of flagship tier one research universities (e.g. University of California, Berkeley, University of Colorado Boulder, University of Texas at Austin, Columbia University, Stanford University). Select 20-25 first author and/or single author articles that this research published across the career (doctoral student stage, pre-tenure stage, and post-tenure stage). Explore the patterns across these studies from the perspective of coherence in research topic and methodology.

Assignment 2: Identify Trend in Educational Research (Part 2) (15% of Course Points)  
(6 pages excluding references and cover page, double-spaced, free style)  
You will find one of the best researchers in your research filed with an H-index higher than 40 (who retired in the past 3 years or still serving in a university). Select 20-25 most cited articles that this research published across the career (with an emphasis of post-tenure stage). Explore the patterns across these studies from the perspective of diversity in research topic and methodology.

Assignment 3: Five Year Research Plan Development (15% of Course Points)  
(12 pages excluding references and cover page, double-spaced, APA style)  
You will develop a research plan that can guide your research for the next 5 years (fall 2016-summer 2021). By indicating your general research goals, and specific research objectives for each semester, you will propose your research designs and methods and describe your research timeline with research phases and individual research activities for data collection and analysis.

Assignment 4: Article Development Plan (15% of Course Points)  
(4-5 pages, double-spaced, free style)  
You will develop a plan to guide your article development and publication. You will propose at least 15 articles to be published based on your five year research plan—for each article development plan you need to prepare an abstract that covers (1) a tentative title, (2) research purpose questions, (3) data resources.

Assignment 5: Peer Review (15% of Course Points)  
(2 page for each research plan, free style)  
You will review three of your classmates’ research proposal that assigned by the instructor. You will write a short review report for each proposal by following the Review Checklist from the National Science Foundation for long-term research plans. In the review report, you need to evaluate your classmates’ proposals against Intellectual Merit & Broader Impacts.
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Assignments and Grades

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<tr>
<th>Assignment</th>
<th>Points</th>
<th>Week</th>
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<tbody>
<tr>
<td>Assignment 1</td>
<td>15 Pts</td>
<td>Week 2</td>
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<tr>
<td>Assignment 2</td>
<td>15 Pts</td>
<td>Week 3</td>
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<td>Assignment 3</td>
<td>15 Pts</td>
<td>Week 5</td>
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<td>Assignment 4</td>
<td>15 Pts</td>
<td>Week 6</td>
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<tr>
<td>Assignment 5</td>
<td>15 Pts</td>
<td>Week 7</td>
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<tr>
<td>Class Participation</td>
<td>5 Pts</td>
<td>Week 1-8</td>
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<tr>
<td>Online Discussion</td>
<td>20 Pts</td>
<td>Week 1-8</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100 Pts</strong></td>
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Grade Distribution:

- **A** 90% - 100% of point total
- **B** 80% - 89.9% of point total
- **C** 70% - 79.9% of point total
- **D** 60% - 69.9% of point total

General Calendar

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

<table>
<thead>
<tr>
<th>Dates/Wks</th>
<th>Class Topics/Activities</th>
<th>Assignments and Due dates</th>
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<tr>
<td>Week 1 June 8</td>
<td>Introduction Part 1 (In Class Meeting)</td>
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<tr>
<td>Week 1 June 10</td>
<td>Introduction Part 2 (In Class Meeting)</td>
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<tr>
<td>Week 2</td>
<td>Research Trend Identification (Online)</td>
<td>Assignment 1 (Due June 19)</td>
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<td>Week 3</td>
<td>Research Trend Identification (Online)</td>
<td>Assignment 2 (Due June 26)</td>
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<tr>
<td>Week 4</td>
<td>Research Trend Identification (Online)</td>
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<tr>
<td>Week 5</td>
<td>Long-Term Research Plan Development (Paired Meeting)</td>
<td>Assignment 3 (Due July 10)</td>
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<tr>
<td>Week 6</td>
<td>Long-Term Research Plan Development (Online)</td>
<td>Assignment 4 (Due July 17)</td>
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<tr>
<td>Week 7</td>
<td>Article/Publication Plan Development (Online)</td>
<td>Assignment 5 (Due July 24)</td>
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<tr>
<td>Week 8</td>
<td>Article/Publication Plan Development (Individual Meeting)</td>
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