

**George Mason University**  
**College of Education and Human Development**  
**EDCI 702: Internship in mathematics education**  
**Fall 2013**  
**Hybrid Course**  
**(Meetings on selected Monday, 4:30-7:10, Thompson Hall L019)**

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### **COURSE DESCRIPTION**

Offers practical experiences and professional challenges for mathematics leaders in authentic educational settings. Activities emphasize school-based and classroom based research and leadership. Develops the skills and abilities of the mathematics leaders to analyze classroom practice, investigate teaching and disseminate information about mathematics education in professional development settings for teachers.

### **COURSE OBJECTIVES**

This course is designed to meet the following *Standards for Elementary Mathematics Specialists* as outlined by the Association for Mathematics Teacher Educators (p. 7, 2010).

#### **III. Leadership Knowledge and Skills**

Elementary Mathematics Specialist professionals need to be prepared to take on collegial nonevaluative leadership roles within their schools and districts. They must have a broad view of many aspects and resources needed to support and facilitate effective instruction and professional growth. They must be able to:

- Use professional resources such as professional organization networks, journals, and discussion groups to be informed about critical issues related to mathematics teaching and learning, e.g., policy initiatives and curriculum trends.
- Select from a repertoire of methods to communicate professionally about students, curriculum, instruction, and assessment to educational constituents—parents and other caregivers, school administrators, and school boards.
- Plan, develop, implement, and evaluate professional development programs at the school and district level and support teachers in systematically reflecting and learning from practice.
- Evaluate educational structures and policies that affect students' equitable access to high quality mathematics instruction, and act professionally to assure that all students have appropriate opportunities to learn important mathematics.

### **NATURE OF COURSE DELIVERY**

This hybrid online course will be taught through a variety of activities to support the development of students' self-study teacher research projects involving: whole class and small group discussions, online work, and dialogue and reflections about practice. Web-based documents and correspondence are accessible through a course Blackboard page which students will use regularly throughout the course and which require students to be able to post and access.

## REQUIRED TEXT

Samaras, A. P. (2010). *Self-study teacher research: Improving your practice through collaborative inquiry*. Thousand Oaks, CA: Sage.

## COURSE REQUIREMENTS AND EVALUATION

- |    |   |     |
|----|---|-----|
| 1. | Participation<br>Includes: <ul style="list-style-type: none"><li>• Attendance</li><li>• Readings, Class Activities, and Online Participation</li><li>• Critical Friend Work</li><li>• Weekly Researcher Log</li></ul> | 20% |
| 2. | Professional Development Design   | 30% |
| 3. | Self-Study Teacher Research Project   | 50% |

All assignments require: American Psychological Association (2010). *Publication Manual of the American Psychological Association*. American Psychological Association: Washington, DC.

### 1. Participation (20%)

#### **Attendance**

Attendance at all scheduled online meetings, for the entire class period is a course expectation and absence will affect your grade. Successful completion of this course requires attendance at all meeting and active participation in the discussions. Being on time is also essential and lateness will affect your grade. Please notify instructor ahead of time if you must miss class and work with peers for missed material.

#### **Assignments**

Since this is a professional development course, high quality work (i.e., "A" work) is expected on all assignments and in class participation. All assignments must be completed. Assignment will be assessed using posted criteria known to the student. For full consideration, all assignments are due to professor *electronically* in the digital drop box prior to the beginning of class on the day they are due, unless otherwise announced. All written assignments are to be word-processed using Times Roman 12 pt font, double-spaced, and POSTED electronically as specified. **Please title each**

**assignment with your last name and the name of the project/assignment, e.g., Smith.ResProp.02.16.12.**

### ***Readings, Class Activities, and Online Participation***

As a distance learning course, there are a significant number of online discussions and activities you will need to complete independently. You are expected to complete all readings and participate in class and all online discussions with openness, consideration, and effort to “hear for” and “listen to” others as you also seek to be understood. Come to class prepared to contribute your critical reflections on both your own experiences and ideas presented by your critical friends. Demonstration of positive and collaborative professional dispositions towards colleagues during peer review, along with a willingness to accept constructive criticism is a course expectation.

### ***Critical Friend Work***

As part of your course participation, you will have the opportunity to work with a critical friend(s) to catalogue your research. Your work involves sharing weekly updates in class, sending and corresponding to critical friend research memos, brainstorming ideas as a teacher about the classroom dilemma you are researching and ideas for strategies and lessons, sharing how you are integrating standards in meaningful ways, and peer review of your research report. The memos are designed to co-support each other’s research and to provide alternative perspectives on interpretation to increase the validity of your research. Critical friends provide support as well as a feedback loop to improve your practice. It is *critical* to have friends in research but critical friends are *not critical* in their approach with each other. Establish ground rules with “critical friends” and visit them often. Use your blackboard space to post and respond to each other’s memos in the “Critical Friend.” Specific critical friends inquiry (CFI) assignments are listed in the course schedule.

### ***Weekly Researcher Log***

Post your weekly updates and progress of your teacher research project each week on your personal researcher log. **(See Self-Study Research Project Timeline in Chapter 2. Table 2.2).** This is your tentative timeline and tool to self-regulate your progress and the research process.

## **2. Professional Development Design (30%)**

The student will design, develop, implement and refine a professional development experience (1-2 hours) for teachers. This should include a plan for the session and any accompanying materials for the professional development (list physical manipulatives), a written reflection paper about the professional development experience (3-5 pages) describing how the goals for the professional development were met, what was learned about teaching teachers, and how the professional development could be modified for future use.

The assignment includes the following components to be submitted on Blackboard:

1. Session plan (15 points possible) – the plan should outline the objectives for the session, detail the activities that the teachers will engage in during the session, and provide opportunities for interaction and discussion of the topics. It should be

written with enough detail that someone else could implement the session. Similar to a lesson plan for K-12 students, it should also include possible questions the teachers might ask and possible responses. The session should be 1-2 hours.

2. Supplementary Materials (5 points possible) – any handouts or other documents (e.g., articles) created for the teachers to take with them or takeaway from the session
3. Reflection Paper (3-5 pages) (10 points possible)– a narrative including responses to the following
  - a. Rationale for the topic (why did you select this topic?)
  - b. What did you learn about teaching teachers?
  - c. What changes would you make to the session?
  - d. What did you learn about teachers’ thinking related to your topic?

### Rubric for Participation

<i>Category</i>	<i>Exemplary 30 pts.</i>	<i>Accomplished 27-29 pts</i>	<i>Developing 25-26 pts</i>	<i>Undeveloped Below 25 pts</i>
<p><i>Attendance/ Participation</i> Attendance and participation are critical components of this course. It gives you the opportunity to learn from and contribute to building a positive classroom experience and community. Participants contribute to each others’ learning in critical friend work by actively listening, exchanging ideas, sharing learning from reading and websites, and supporting each other’s efforts.</p>	<p>Outstanding Participation; participates regularly and actively in discussions and activities. Promotes conversation focused on the topic. Comments demonstrate a high level of understanding and contribution from assigned readings. Listens actively to peers. Prompts peer feedback and input.</p>	<p>Participates in discussions and activities on a regular basis; questions and comments reveal thought and reflection and contribution from assigned readings. Frequently involves peers in discussion.</p>	<p>Doesn’t contribute to discussions or activities very often, but generally reveals some thought and reflection and some contribution from assigned readings. Follows rather than leads group activities. Solicits some peer discussion. Misses classes. Is late for class.</p>	<p>Few meaningful contributions to class discussions. Little evidence of participation and contribution from assigned reading. Shows little concern for peers’ learning or input. Misses classes and is late for class. Does not make up work.</p>

### 3. Teacher Research Project Report & Presentation (50%)

You are required to write a final report that includes the following sections: Rationale/Introduction, Research Question, Review of Related Literature, Method, Context, Participants, Data Collection, Analysis, Findings, Limitations, and Discussion including your reflections of self-study and implications for practice/further research.

Your project should be useful to you and your students. A written report that includes the specific headings and subheading are listed in Chapter 12 of the textbook.

In addition to the final report, students will submit assignments throughout the semester that will support the development and implementation of their project: a research proposal and a draft literature review. Finally, students will present their findings in the last class session of the semester.

**A. Research Proposal (5 points for on-time submission, see course schedule)**

Write a research proposal. You may also elect to add a visual representation to your research proposal. The idea is for the visual to help you figure out your “thesis” and not to enter an art show. Approach this assignment from where you are with it and honor its incompleteness as part of the research process. Ask yourself does the written or visual proposal and presentation include or demonstrate:

- **Purpose: A clearly defined focus and purpose**  
What is the problem/issue to be addressed?
- **Rationale: Why you chose to explore this research topic and why it matters to others**  
What is going on your classroom which brings your attention to this problem/issue? What are your hunches about the reasons for this problem/issue? Why are you interested in this topic and why does it matter to you, your students, and the field?
- **Method and Data Sources:** How do you propose to go about exploring your inquiry? What is your context? Who are your participants? What are you considering as possible pedagogical strategies? What data sources are you considering that would be available to you?

**B. Draft Literature Review (5 points for on-time submission, see course schedule)**

Please post your draft literature review.

- Consider:
  - What does the literature review add to your understanding of your research topic?
  - What common topics and themes have you found in the literature?
  - What ideas for pedagogical strategies can you adapt from the literature?
- Use the topics and themes to design your conceptual framework or mapping of the “big ideas” and connections you find in the literature to your study.

**C. Rubric for Self-Study Teacher Research Project Report**

Criteria for Evaluating the Research Report (70 Total Possible Points)

**Abstract (5 points possible)**

1. Have you provided a single, articulate, concise paragraph of no more than 150 words
2. Does you abstract concisely describe your purpose, context, method, key findings, and significance?

**Rationale** (5 points possible)

1. Have you clearly and concisely explained why this research is important to you?  
Have you offered perspectives that shaped this question for you?
2. Did you provide a rationale for why this research is important to your students?
3. Have you addressed the broader educational and social significance of this research?

**Statement of the Research Problem/Question** (5 points possible)

1. Have you clearly and concisely stated the research problem?
2. Have you clearly and concisely state your main research question and any sub questions?

**Review of Literature and Conceptual Framework** (10 points possible)

1. Did you conduct an ongoing literature review which informed your research?
2. Is the review relevant and connected to your study?
3. Is the review adequate, coherent, and analytical?
4. Does the review include references from a variety of sources?
5. Is the review integrated into a conceptual framework with a mapping of the theories, literature, and phenomena that help to inform your study?

**Research Method** (15 points possible)

1. Have you described your research context; community, school, and classroom context, and demographic information of participants?
2. Did you explain which self-study method you chose and why?
3. Did you include your reflection of the problem? e.g., observations, possible causes?
4. Have you explained the reasons for your pedagogies based on your noticing of your classroom and the literature reviewed?
5. Have you described in detail what data you collected, how you collected it, and when you collected it, including data generated from your pedagogies and strategies?
6. Does your data include a variety of sources from multiple sources?
7. Did you include a timeline for the data you collected and your planned interventions?
8. Did you explain how you analyzed your data and include a complete data audit trail?
9. Have you included and explained the role of your critical friends in your data interpretations?
10. Did you explore using visuals and technologies for analyzing and displaying your findings in a coherent manner?

**Findings** (10 points possible)

1. Did you circle back to your research question(s) and discuss how they relate your findings?
2. Are the findings thoroughly and adequately presented?
3. Is there convincing evidence to support your themes?
4. Is there connection and coherence among the separate themes?
5. Did you share your findings with your critical friend?

**Discussion, Self-Study of Teaching, and Implications (10 points possible)**

1. Have you explained the possible implications to your students' learning?
2. Have you explained the possible implications of to your understanding of teaching?
3. Have you offered a self-assessment of how you addressed the self-study methodological components using the Five Foci chart?
4. Have you discussed how you reshaped your practice from critical friend feedback?
5. Does your discussion include evidence of your deep reflection and self-study of teaching?
6. Revisit your original research questions. Take a retrospective journey and reflect back on the "self" or your role and the conscious (and perhaps at the time unconscious) consequences of your actions in the process of studying your teaching practice.
7. Have you adequately explained the possible implications to the education field?
8. Have you adequately explained the possible implications of your study to national and state education standards?
9. Have you discussed any limitations and identified future research possibilities?

**References and Appendix (5 points possible)**

1. Did you follow the APA style for the report, references, citations, and appendix?
2. Are references current and from different and high quality sources?
3. Have you provided a complete list of all print and non-print (internet) references?

**Organization (5 points possible)**

1. Does the report include a cover page, title, author's name and professional affiliation?
2. Is your report well organized, grammatically correct, coherent and complete?
3. Does the report have your distinctive focus and voice? Have you used professional language?, i.e., no jargon Have you written in an accessible style and presentation?
4. Are all references cited in the research report included in the references?

**D. Presentation of Research (20 points)**

You are required to present your research project to your peers in an 8 minute presentation that includes a one-page handout of a special research resource for your peers, e.g., a research tool you found, a survey they can adapt in their classroom, technology tool you discovered, student exemplar that highlight the impact of your work, personal reflection to share. Oral presentations need to be professional and stay within the time frame allocated in consideration of peers' presentations.

Grading Scale for Research Project:

**Exemplary:** 70 points. Exceeds meeting criteria, multiple sources of evidence that substantially exceeds requirements.

**Accomplished:** 63-69 points. Provides convincing evidence of sound work, substantially meets requirements.

**Developing:** 58-62 points. Provides basic and somewhat convincing evidence that moderately meets criteria. Consider revision.

**Undeveloped:** 57 points and below. No evidence or little evidence of meeting the criteria.

**NOTE:** This syllabus and schedule has been revised and adapted from the sample syllabus at <http://www.sagepub.com/samaras/resources.htm> created by Anastasia Samaras (2011).



Week	Topic	Self-Study Project Timeline and Assignments Due	Professional Development Project Assignments Due
1 8/26	<p>INTRODUCTION TO COURSE</p> <p>Overview of Self-Study Teacher Research Process and Project</p>	<p>Introductory note emailed about bringing your Critical Friend Inquiry (CFI) CFI 1.1 (p. 5-6) Start noticing your classroom. Brainstorm possible research topics.</p>	
2 Online 09/09	RESEARCH QUESTION	<p>Read Preface, Chapters 1 &amp; 2 Overview 12</p> <p><b>POST: Your response to</b> CFI 5.1 (p. 96-97) and CFI 5.3 (p. 104-105)</p> <p>Please <u>post a picture of an artifact (object) or provide a hyperlink</u> to help us learn a little about your research interests. It's a way for us to get to know each other's areas of research interests. The artifact is a tool to prompt your thinking about your research.</p>	
3 Online 09/16	RESEARCH DESIGN	<p>Read: Chapters 5, 6 &amp; 7</p> <p><b>POST Critical Friend Research Memo 1 &amp; Response:</b> CFI 4.1 (p. 82)</p>	<b>POST: Topics and Goals for PD Session</b>

<b>4</b> 9/23 <b>Face-to-Face</b>	RESEARCH ETHICS	Read: Chapter 8 & 9 In Class Activity: CFI 7.1	POST & Bring Professional Development Session Plan Draft
<b>5</b> 9/30	DATA COLLECTION	Read: Chapters 10 & 11 <b>POST: Response to CFI 8.1</b> (p. 171-172)	
<b>6</b> Online 10/7	DATA ANALYSIS	<b>POST Literature Review Draft</b> Begin Data Collection	
<b>7</b> 10/14 Online	VALIDATION	Continue Data Collection & Begin analyzing data <b>POST: Data Collection Reflection</b>	
<b>8</b> 10/21 <b>Face-to-Face</b>	WRITING	Continue Data Collection & analyzing data In Class Activity CFI 11.2 (p. 219)	POST & Bring Professional Development Session Plan Final
<b>9</b> 10/28 Online	FINDINGS	Continue Data Collection & analyzing data <b>POST Critical Friend Research Memo 3 &amp; Response:</b> CFI 11.1. (p. 215) Read Chapter 12	<i>Present PD Session sometime before Thanksgiving if possible – consult the instructor if you need to make adjustments</i>
<b>10</b> 11/4 Online	CRITICAL FRIEND WORK	Data Analysis, Summarizing findings Dialogue about findings In Class Activity: CFI 11.3 (p. 222)	
<b>11</b> 11/11 Online	DISCUSS PAPER DRAFTS	<b>POST: Research Paper Draft to Critical Friend and Professor</b>	

<b>12</b> 11/18 <b>Face-to-Face</b>	CRITICAL FRIEND WORK	<b>POST: Feedback on Research Paper to Critical Friend</b>	
<b>11/23</b> <i>No Class</i>	<i>Thanksgiving Week</i> <i>No Class</i>		
<b>13</b> 11/25 Online	CHECK-IN ON WRITING	<b>POST: Abstract Draft</b> Read Chapter 13	<b>POST: Reflection about PD Session</b>
<b>14</b> 12/9 <b>Face-to-Face</b>	RESEARCH PRESENTATIONS  Exit Reflection on Professional Growth and Continued Goals	<b>POST and Bring: Final Draft Research Paper</b>	