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COURSE OBJECTIVES

The EDU263G (Quantitative Reasoning and Mathematics III) course is Part 3 of the three-course sequence EDU263E, F, and G. We will build on what we have learned in EDU263E and F from the pre-fall and fall 2008 to think carefully about elementary school students' thinking of mathematics and how different instruction may or may not support their learning meaningfully. In this course, we are focusing our effort on teaching in our placement classrooms, following the framework of lesson study and PACT. Lesson study is a collaboration-based teacher professional development that follows a meaningful teaching cycle of setting goals – pre-assessing student thinking – planning a lesson – teaching a lesson (while being observed) – and reflecting. PACT (Performance Assessment for California Teachers) also follows a similar teaching pattern, and we will combine these two to support your learning this quarter. The focus content topic of the quarter will be geometry.

COURSE GRADE

Course grades will be based on attendance, participation in classroom activities (discussion, math content activities, etc.), punctuality and completion of the assignments for the course (description will follow).

1. Classroom participation (reading assignments, discussion participation, math content activities)	10%
2. Student assessment summary	20%
3. Unit plan	20%
4. Planning commentary	20%
5. Instruction commentary (in-class activity)	10%
6. Final reflection	20%

While final course grades are given as letter grades (e.g., A, B, C), your course assignments will receive one or more of the informal grades described below:

√+ (**check-plus**): This will be given for assignments that show considerable thought and insight. They will contain convincing arguments and analyses and will tie together factual information and personal opinion in an extremely coherent manner.

√ (**check**): This will be the modal grade given. The assignment addresses the points that were expected by the instructors and are carefully completed.

√- (**check-minus**): This will be given for assignments that are not meeting the expectation of the instructor, often due to the lack of careful preparation and effort. This often accompanies specific comments, questions, and feedback, and you are encouraged to reflect on your work to make it better next time.

BB SITE

Please register for EDU263G on the Stanford University School of Education (SUSE)'s Blackboard site at <http://bb.stanford.edu> . The course materials may be viewed on the web site, and you are required to post your assignment on the site prior to the assignment's due date. Some course-related communications will also occur on the site.

ASSIGNMENTS (DETAILED DESCRIPTIONS WILL BE GIVEN IN CLASS)

1. Weekly reading and participation: You are expected to finish all assigned reading prior to the class each week and come to the class ready to discuss your ideas.
2. CT interview summary: You will interview your CT about the challenges for teaching geometry for the grade level. Send the result of the interview to Aki, Laura, and Jennifer via email by the *midnight Monday January 12th* .
3. Student assessment summary: You have done this twice now for EDU263E and F, so you know the drill ☺. Each lesson study group will decide on a set of student assessment tasks based on your examination of research-based student learning trajectories. It can be hands-on activity tasks, paper-and-pencil tasks, or a combination of the two. If a group chooses to use paper-and-pencil tasks, you are to meet with students and have them explain their thinking afterwards. The tasks need to be reasonable and should NOT take more than 15 minutes per student. With the help of CTs, identify a sample of students in the classrooms (high-middle-low, 2 each) and assess their understanding (*assessment data due Feb. 3*).

After sharing the results in groups and comparing and analyzing the findings with the data presented in prior research, each of you will write a summary of the interview results based on the group discussion. You will describe interview tasks, prepare a table/figure representation of the results, and write a short summary of how the findings support research and what the results suggest for your next lessons. *The findings from the assessment should be incorporated in your "Context of Learning" portion of PACT. (assessment summary due Feb. 10)*

4. Unit plan: Each group designs/writes a unit/lesson plan in collaboration to make their teaching philosophy visible. The unit will consist of 3 – 5 lessons (to meet PACT requirement). While the unit plan needs to be written up individually for PACT, you are encouraged to use the same lessons as much as possible. The sample lesson plan format will be given. (*due March 3*)
5. Planning commentary: Please refer to PACT guidelines for the Planning Commentary.

(due March 3)

6. Instruction commentary: This will be an in-class activity. We will watch a sample PACT video and write instruction commentary, following the guidelines provided, in class. *(March 3)*
7. Group presentation *(March 10)*
8. Final reflection: You will write a short paper reflecting on your development and learning as a teacher for the quarter as well as since the beginning of the STEP program. *(due March 18)*

COURSE TEXT AND READING

We will continue to use the course text (Van de Walle).

Van de Walle, J. (2006). *Elementary and middle school mathematics: Teaching developmentally*. Boston: Allyn and Bacon.

Additionally, please purchase the following book(s) for the quarter [available through NCTM – www.nctm.org]: If you are teaching lower-elementary grades, buy the volume for Pre-K to Grade 2. If you are teaching upper-elementary grades, buy the volume for Grades 3 to 5. These books are inexpensive and are great teaching resources to you this quarter and for future years, so you may want to consider buying both volumes.

Rindell, C. R., Small, M., Cavanagh, M., Dacey, L., Greenes, C. E., and Sheffield, L. J. (2001). *Navigating through geometry in prekindergarten – Grade 2*. Reston, VA: National Council of Teachers of Mathematics.

Gavin, M. K., Pelkin, L. P., Spinello, A. M., and St. Marie, J. (2001). *Navigating through geometry in Grades 3 – 5*. Reston, VA: National Council of Teachers of Mathematics.

Other reading assignments will be found on the bb site.

Lewis, C. and Tsuchida, I. (1998). A lesson is like a swiftly flowing river: Research lessons and the improvement of Japanese education. *American Educator*, Winter, 14-17 & 50-52.

Clements, D. H. (2003). Teaching and learning of geometry. In J. Kilpatrick, W. G. Martin, and D. Shifter (Eds.). *A research companion to Principles and Standards for school mathematics*. Reston, VA: National Council of Teachers of Mathematics. pp. 151-178.

Fuys, D. J. and Liebov, A. K. (1993). Geometry and spatial sense. In R. J. Jensen. (Ed.). *Research ideas for the classroom: Early childhood mathematics*. NY: McMillan. pp.195-222.

Geddes, D. and Fortunato, I. (1993). Geometry: Research and classroom activities. In Owens, D. T. (Ed.). *Research ideas for the classroom: Middle grades mathematics*. NY: McMillan. pp.199-222.

Peressini, D. and Knuth, E. (2000). The role of tasks in developing communities of mathematical inquiry. *Teaching Children Mathematics*, 6(6). 391-397.

Hufferd-Ackles, K., Fuson, K. C., and Sherin, M. G. (2004). Describing levels and components of a math-talk learning community. *Journal for Research in Mathematics Education*, 35 (2). 81 – 116.

COURSE CALENDAR

Dates	Topics	Reading due	Assignments due
Jan.6	Welcome back and catch up; overview of the quarter; introduction to lesson study	Lewis/Tsuchida ¹	
Jan.13	Overview of PACT	PACT guidelines	(CT interview results emailed Jan. 12 & bring to class)
Jan.20	Geometry learning in elementary schools; Analysis of standards	VW Ch.21; Clements; Geometry standards for your grade level	
Jan.27	Geometry learning (continued); Designing student pre-assessment	Fuys/Liebov OR Geddes/Fortunato	
Feb.3	Geometry and other math topic; Analysis of assessment data	VW Ch. TBD	(Pre-assessment data)
Feb.10	Geometry and other math topic; Lesson planning	“Navigation” lessons	Student assessment summary
Feb.17	Math talk; Lesson planning	Peressini/Knuth; Hufferd-Ackles, et. al.	
Feb.24	Lesson planning		
RESEARCH LESSON (Feb 25 – Mar 3) PACT TEACHING (~ Mar 17)			
Mar.3	In-class PACT activity (instruction commentary)		Unit plan and planning commentary
Mar.10	Final presentations		Group presentations
Mar.17	Final paper due		Reflection paper

Note: For research lesson events, each lesson study group will meet at a classroom and observe a lesson (participation for the research lesson event is required).

¹ VW means van de Walle, and other names indicate authors of the assigned articles/chapters (please see the reading list above).