EDUC 263C: CURRICULUM & INSTRUCTION IN MATHEMATICS
CERAS 302
TUESDAYS, 3:15 – 6:00 PM

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INTRODUCTION

This is the third of a three-course sequence focused on mathematics teaching and learning. The course sequence is designed to create an opportunity for sustained learning and professional growth. Our goals for the year are to help you:

- Increase your knowledge of mathematics and mathematics pedagogy
- Examine your own knowledge, beliefs, and assumptions about mathematics, teaching, and students
- Increase your theoretical knowledge and practical experiences in planning, teaching, and assessing mathematics
- Understand the mathematical needs of a diverse range of students
- Understand the complexities of diverse, multi-ability classrooms while broadening your repertoire of teaching strategies
- Learn from your experiences in schools through informed reflection

This quarter we will continue to develop skills in lesson planning and will focus on how particular lessons fit into larger instructional learning segments. We will draw upon what we have learned to design learning segments and individual lessons centered on equity. The experience of developing and refining a segment of instruction is the cornerstone of our work this quarter, and it will prepare you for success on edTPA, the culminating performance assessment of your teaching proficiency in the spring. You will submit pieces of this learning segment often this quarter and there will be frequent chunks of class time dedicated to workshopping its parts.

COURSE REQUIREMENTS

We expect you to come to class having completed the reading and assignments due for that day and prepared to participate in class discussions and activities. Attendance to all sessions is mandatory. You can request an extension on a due date, but it must be done in a timely manner.

Assignments:

Learning Segment Assignment (LSA) (See the linked assignment sheet for details.)

Assessment and Evaluation Criteria

During week 6 (on 2/14), we will take some time to analyze an assessment that you will use to evaluate your students' developing knowledge and skills. It should be an assessment that will be completed by the whole class featured in the learning segment. The assessment should reflect the work of individuals, not groups, but may be individual work from a group task. The assessment should provide opportunities for students to demonstrate: (a) conceptual understanding, (b) procedural fluency, and (c) mathematical reasoning and/or problem-solving skills.

Class Facilitation/Rehearsal

During weeks 8 and 9 (on 2/28 and 3/7), we will take turns facilitating a mathematics task using the 5 Practices Framework. You will have the option to do this individually or with a partner.

Short video clip

During week 10 (on 3/14), we will take some time to analyze student reasoning in your classrooms using video records. You will select a 3-minute video clip from one of your video observations. This clip should address either rubric 6, 7, 8, or 9 of the edTPA. You do not need to be in the clip, but it's fine if you are.

Submitting Assignments:

All assignments should be digitally submitted to Canvas as a single word document, unless otherwise specified by the instructors. All feedback will be provided digitally within your submitted documents in Canvas.

> **Please save all files using the following naming convention:**
> **Lastname_Assignment.doc**
> **For example: Brown_Lesson Plans.docx**

Assessments and Grading:

Your grade will be based primarily on the quality of the assignments mentioned above. We will also consider attendance and active contributions to class discussions. As with all of your work in C&I this year, you may revise and resubmit any written assignment for a higher grade.

We expect that you will turn in all assignments by the due date. Please contact us well in advance if you have concerns about completing assignments on time. Extensions may be granted by your instructors, if requested. Late work that is submitted without an extension may be subject to a grade penalty.

UNIVERSITY POLICIES

All Stanford students are expected to follow the **Stanford Honor Code** and **Fundamental Standard**, as noted in the STEP Handbook and Stanford Student Guide. Website: https://communitystandards.stanford.edu/student-conduct-process/honor-code-and-fundamental-standard

Students with Documented Disabilities

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: (650) 723-1066, URL:https://oae.stanford.edu/).

COURSE SCHEDULE

Week	Topic	Readings	Assignments
1 **1/10**	The Strands of Mathematical Proficiency and Building Procedural Fluency	Kilpatrick, J., Swafford, J., & Findell, B. (2001). The Strands of Mathematical Proficiency. In *Adding It Up: Helping Children Learn Mathematics*, 115-155. National Academy Press. Chapter 4. Bay-Williams, J. M. & Stokes-Levine, A. (2017). Teaching to Build Procedural Fluency. In *Enhancing Classroom Practice with Research behind Principles to Action*, 61-72. NCTM. Chapter 5.	
2 **1/17**	Considering Evidence of Learning and Setting Goals	Tomlinson, C. A., & McTighe, J. (2006). Considering Evidence of Learning in Diverse Classrooms. In *Integrating Differentiated Instruction & Understanding by Design: Connecting Content and Kids*, 59-82. ASCD. Chapter 5. Stein, M. K. & Meikle, E. (2017). The Nature and Role of Goals in and for Mathematics Instruction. In *Enhancing Classroom Practice with Research behind Principles to Action*, 1-11. NCTM. Chapter 1.	Component 1: Memo / edTPA Context For Learning Template (pp. 39-41) ***Due: 1/22 (Sunday at 10 pm)***
3 **1/24**	Introduction to the 5 Practices Framework	Smith, M. S., Steele, M. D., & Sherin, M. G. (2020). Introduction. In *The Five Practices in Practice: Successfully Orchestrating Mathematics Discussions in Your High School Classroom*, i-13. Corwin. Chapter 1. Smith, M. S., Steele, M. D., & Sherin, M. G. (2020). Setting Goals and Selecting Tasks. In *The Five Practices in Practice: Successfully Orchestrating Mathematics Discussions in Your High School Classroom*, 14-47. Corwin. Chapter 2.	
4 **1/31**	Anticipating Student Responses	Smith, M. S., Steele, M. D., & Sherin, M. G. (2020). Anticipating Student Responses. In *The Five Practices in Practice: Successfully Orchestrating Mathematics Discussions in Your High School Classroom*, 48-83. Corwin. Chapter 3.	Component 2: Lesson Plans Draft (using edTPA lesson plan instructions on p. 9) ***Due: 2/5 (Sunday at 10 pm)***

5 **2/7**	Monitoring Student Work	Smith, M. S., Steele, M. D., & Sherin, M. G. (2020). Monitoring Student Work. In *The Five Practices in Practice: Successfully Orchestrating Mathematics Discussions in Your High School Classroom*, 84-119. Corwin. Chapter 4.	Component 3: Revised Lesson Plans (using edTPA lesson plan instructions on p. 9) ***Due: 2/12 (Sunday at 10 pm)***
6 **2/14**	Selecting and Sequencing Student Solutions	Smith, M. S., Steele, M. D., & Sherin, M. G. (2020). Selecting and Sequencing Student Solutions. In *The Five Practices in Practice: Successfully Orchestrating Mathematics Discussions in Your High School Classroom*, 120-169. Corwin. Chapter 5.	Assessment and Evaluation Criteria: Bring an assessment that you will use in your learning segment (see page 28 of edTPA) **(No Submission)**
7 **2/21**	Connecting Student Solutions	Smith, M. S., Steele, M. D., & Sherin, M. G. (2020). Connecting Student Solutions. In *The Five Practices in Practice: Successfully Orchestrating Mathematics Discussions in Your High School Classroom*, 170-211. Corwin. Chapter 6. Smith, M. S., Steele, M. D., & Sherin, M. G. (2020). Looking Back and Looking Ahead. In *The Five Practices in Practice: Successfully Orchestrating Mathematics Discussions in Your High School Classroom*, 212-224. Corwin. Chapter 7.	Component 4: edTPA Planning Commentary Prompts 1, 2, and 3. (pp. 10-11) ***Due: 2/26 (Sunday at 10 pm)***
8 **2/28**	Developing Student Agency and Supporting Productive Struggle	Gutstein, E. (2007). "And That's Just How It Starts": Teaching Mathematics and Developing Student Agency. *Teachers College Record*, *109*(2), 420-448. Peterson, B. E. & Viramontes, R. (2017). Key Questions to Guide Teachers in Supporting Productive Struggle in Learning Mathematics. In *Enhancing Classroom Practice with Research behind Principles to Action*, 61-72. NCTM. Chapter 5.	**Class Facilitation/Rehearsal**
9 **3/7**	Student Centered Instruction	Reinhart, S. C. (2000). Never Say Anything a Kid Can Say!. *Mathematics Teaching in the Middle School*, *5*(8), 478-483. Jacobs, V. R., Martin, H. A., Ambrose, R. C., & Philipp, R. A. (2014). Warning Signs!. *Teaching Children Mathematics, 21*(2), 107-113.	Component 5: edTPA Planning Commentary Prompts 4 and 5. (pp. 11-12) ***Due: 3/12 (Sunday at 10 pm)*** **Class Facilitation/Rehearsal**

10 **3/14**	Collaborating on Instruction	Jilk, L. M. (2016). Supporting Teacher Noticing of Students' Mathematical Strengths. *Mathematics Teacher Educator*, *4*(2), 188-199. Berry III, R. Q. & Berry, M. P. (2017). Professionalism: Collaborating on Instruction. In *Enhancing Classroom Practice with Research behind Principles to Action*, 153-161. NCTM. Chapter 13.	Video Clip: Bring a 3-minute teaching clip to class that addresses either Rubric 6, 7, 8, or 9 of edTPA **(No Submission)**
Finals Week		Gutiérrez, R. (2007). (Re)Defining Equity: The Importance of a Critical Perspective. In *Improving Access to Mathematics: Diversity and Equity in the Classroom*, 37-50. New York, NY: Teachers College Press. Gutiérrez, R. (2008). Research Commentary: A Gap-Gazing Fetish in Mathematics Education? Problematizing Research on the Achievement Gap. *Journal for Research in Mathematics Education, 39*(4), 357-364.	All Revised LSA Components & Reflection ***Due: 3/19 (Sunday at 10 pm)***