Education 263A: Curriculum and Instruction in Mathematics Summer 2021
3:15 pm - 6:00 pm July 6, 7, 8, 11, 12, 13, 14, & 15
CERAS 302

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Introduction

This is the first of a 3-course sequence focusing on mathematics teaching and learning. The course provides an opportunity for sustained learning and professional growth. Our goals are to help you:

- understand the nature of effective teaching and learning of mathematics,
- increase your knowledge of mathematics and mathematics pedagogy,
- increase your theoretical knowledge and practical experience in planning, teaching, and assessing mathematics,
- understand the mathematical needs of a diverse range of students,
- understand the complexities of diverse, multiple-ability classrooms while broadening your repertoire of teaching techniques, and
- learn from your experiences in schools through informed reflection.

Throughout the three-course sequence, we will consider the Common Core State Standards for Mathematics.

In the first quarter we will analyze teaching practices in many ways, considering the role played by mathematics, the teacher, and the students. Several different examples of practice will be analyzed on video. We will also engage in mathematical tasks that will place you as learners of mathematics and pedagogy. We will consider the acts of close and respectful listening to students' mathematical thinking and asking important questions in order to probe and further understanding. There will be a joint focus throughout the course on research and practice.

Course Requirements

We expect you to come to class having completed the reading and assignments due for that day and to be prepared to participate in class discussions and activities. This means that you have a clear idea of the main points; you may have formulated some questions; and/or you have noted any related issues that the reading or topic raised for you. On some days we will ask you to respond to the article, and engage with your peers, in the discussion section of Canvas.

Your participation depends upon your timeliness in attendance. If for any reason, you will miss or be late to class, please email the instructors ahead of time. In the summer quarter, you will be required to complete several assignments, conduct readings (see Course Schedule) and complete daily tasks, which will be described during class.

Major Assignments:

- Maths History: Due Tuesday, July 5th by 12:00pm.
- Reflection on class TBD
- Dear Data Representation. Due Monday July 11th (bring to class).
- Reflecting on Summer Mathematics: Due Monday, July 18th by midnight.

Your Grade

Our expectation is that everyone will receive an A grade. If your work – including the quality of your participation and assignments, (the Final Reflection Assignment, The Dear data assignment and a class Reflection) – is not at that standard we will discuss ways to improve it.

Regarding participation, we are looking for you to contribute to small and whole group discussions in class, and online discussions. Whether you are more talkative or more introverted in nature, we expect that you make concerted efforts to both listen and contribute, monitoring your level of sharing, and making space for others to join in. We recognize that you may have more to say about one topic over another, but across the 8 classes, we should have heard your thoughts and ideas in both small and whole group discussions and online. This will help your learning as well as the learning of the group.

Course Schedule

Date	Readings
7/6	Session 1: Mathematical Mindsets
	Nash, R. J. (1996). Fostering moral conversations in the college classroom. *Journal on Excellence in College Teaching*, *7*(1), 1-5.
7/7	Session 2: What is Mathematics?
	Lockhart, P. (2008). Lockhart's lament. *MAA Online*. Wolfram, C (2020). *The Math(s) Fix: An Education Blueprint for the AI Age*. Wolfram Media Inc. (Chapter 1)
7/8	Session 3: Teaching to Big Ideas
	Boaler, J., LaMar, T., & Williams, C. (2021). Making Sense of a Data-Filled World. *Mathematics Teacher: Learning and Teaching PK-12*, *114*(7), 508-517.
7/11	Session 4: Number and Data Flexibility
	Deslauriers, L., McCarty, L. S., Miller, K., Callaghan, K., & Kestin, G. (2019). Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. *Proceedings of the National Academy of Sciences* , 116 (39), 19251-19257.
7/12	Session 5: Putting Ideas into Practice
	Cabana, C; Shreve, B, & Woodbury, E. (2014). Working towards an Equity Pedagogy. In Nasir, et al (2014). *Mathematics For Equity*. Teachers College Press.
7/13	Session 6: Equity Focused Teaching and Learning

	Boaler, J. (2015). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching*. John Wiley & Sons. (Chapter 6) Joseph, N. M., Hailu, M., & Boston, D. (2017). Black women's and girls' persistence in the P–20 mathematics pipeline: Two decades of children, youth, and adult education research. *Review of Research in Education*, *41*(1), 203-227.
7/14	Session 7: Classroom Culture of Socio-mathematical Norms
	Boaler, J. (2002). *Experiencing School Mathematics: Traditional and Reform Approaches to Teaching and Their Impact on Student Learning.* (Revised and Expanded Edition ed.). Mahwah, NJ: Lawrence Erlbaum Association. (Chapters 4 and 5)
7/15	Session 8: Language Learners and Culturally Relevant Pedagogy
	Chval, K. B, & Chavez, O. (2011). Designing math lessons for English Language Learners. *Mathematics Teaching in the Middle School*, 17(5), 261-265. Ladson-Billings, G. (2009). The Dreamkeepers: Successful Teachers of African American Children. Chapter 2.

What to turn in and where:

What:	By When:	Where:	Formatting & Length:
Maths History: An Informal Essay	Tuesday, July 5th by 12:00pm	Upload to Canvas	500 words
Dear Data	Monday, July 11th (bring to class)	Upload to Canvas	images
Reflecting on Summer Mathematics	Monday, July 18th by 11:59pm	Upload to Canvas	1000-1500 words