

EDUC 263F: Quantitative Reasoning and Mathematics II
Stanford University, Fall 2022
Wednesdays, 2:30-5:15pm in CERAS 204

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Course Objectives:

The EDU263F (Quantitative Reasoning and Mathematics II) course is Part 2 of a three-course sequence in elementary mathematics teaching methods. This sequence is designed to provide teacher candidates with a coherent set of experiences for mathematics teaching and learning in elementary schools. Through assigned readings, classroom discussions, content rich mathematics activities, and assignments that require data collection in your field placement, you will be supported as you make sense of how to approach the profession of teaching. Through thinking about ourselves as teachers and examining classroom activity, we will set the stage for our development as elementary mathematics teachers.

Please note: We will adhere to the syllabus as much as possible. However, we are sensitive to the needs of the class, therefore, the syllabus is subject to change.

Course Assignments:

Assignment	Due Date
<i>Lesson Plan</i> Components of the plan due Class 2 - 9 (see summary below) A full draft of the LP is due on canvas and in class on Nov 15. A revised LP is due on canvas and in class on Dec. 6	Draft LP: Nov 15 Revised LP: Dec. 6
<i>Readings</i> Assigned readings should be done before class.	Before every class
<i>Participation</i> Our whole-class learning is enhanced when everyone reads carefully and fully participates in class activities and discussions.	Every class

Course Grades:

Our expectation is that everyone will receive an A grade. If your work – including the quality of your participation and Lesson Plan assignment – is not at that standard we will discuss ways to improve it and you will have the opportunity to revise and resubmit. Our goal is learning, not evaluation.

Regarding participation, we are looking for you to contribute to both small and whole group 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 nine weeks, we should have heard your thoughts and ideas in both small and whole group discussions and those ideas should be connected in some way to our shared readings. This will help your learning as well as the learning of the group.

Course Readings:

- Ball, D., Thames, M. and Phelps, G. 2008. “Content Knowledge for Teaching: What Makes It Special?”
- Bartell, T. G., Yeh, C., Felton-Koestler, M. D., & Berry III, R. Q. (2022). *Upper elementary mathematics lessons to explore, understand, and respond to social injustice*. Corwin Press.
- Bullock, E., and Meiners, E.. 2019. “Abolition by the Numbers Mathematics as a Tool to Dismantle the Carceral State (and Build Alternatives).” *Theory into Practice* 58 (4): 338–46.
- Bunch, G. C., & Martin, D. (2021). From “academic language” to the “language of ideas”: A disciplinary perspective on using language in K-12 settings. *Language and Education*, 35(6), 539-556.
- Erath, K., Ingram, J, Moschkovich, J. and Prediger, S.. 2021. “Designing and Enacting Instruction That Enhances Language for Mathematics Learning: A Review of the State of Development and Research.” *ZDM: The International Journal on Mathematics Education* 53 (2): 245–62.
- Flores, N. 2020. “From Academic Language to Language Architecture: Challenging Raciolinguistic Ideologies in Research and Practice.” *Theory into Practice* 59 (1): 22–31.
- Gilbertson, N. 2019. “Maintaining the mathematical focus of whole-class discussions: dilemmas and instructional decisions.”

- Gresalfi, M., and Hand, V. 2019. “Coordinating Situated Identities in Mathematics Classrooms with Sociohistorical Narratives: A Consideration for Design.” *ZDM: The International Journal on Mathematics Education* 51 (3): 493–504.
- Gutiérrez, R. 2017. “Political Conocimiento for teaching mathematics: why teachers need it and how to develop it.”
- Jackson, K., Shahan, E., Gibbons, L., and Cobb, P. 2012. “Launching Complex Tasks.” *Mathematics Teaching in the Middle School* 18 (1): 24–29.
- Koestler, C., Ward, J., Zavala, M., & Bartell, T. (2022). Chapter 2 . In *Early Childhood Mathematics Lessons to Explore, Understand, and Respond to Social Injustice* (pp. 24–40). essay, Corwin Mathematics.
- Lambert, R. (2015). Constructing and resisting disability in mathematics classrooms: A case study exploring the impact of different pedagogies. *Educational Studies in Mathematics*, 89(1), 1–18. <https://doi.org/10.1007/s10649-014-9587-6>
- Louie, Nicole, Aditya P. Adiredja, and Naomi Jessup. 2021. “Teacher Noticing from a Sociopolitical Perspective: The FAIR Framework for Anti-Deficit Noticing.” *ZDM: The International Journal on Mathematics Education* 53 (1): 95–107.
- Munson, J., Langer-Osuna, J., Kwon, F., & Trinkle, M. (2023). *The Collaborative Math Classroom: Launching a student-centered mathematical community*. Heinemann.
- Smith, M., and Stein, M.. “Selecting and Creating Mathematical Tasks: From Research to Practice.” *Mathematics Teaching in the Middle School* 3 (February 1998): 344–50.
- Sullivan, Peter, and Nadia Walker. 2015. “Exploring a Structure for Mathematics Lessons That Foster Problem Solving and Reasoning.”
- Tekkumru-Kisa, Miray, Mary Kay Stein, and Walter Doyle. 2020. “Theory and Research on Tasks Revisited: Task as a Context for Students’ Thinking in the Era of Ambitious Reforms in Mathematics and Science.” *Educational Researcher* 49 (8): 606–17.
- William, D. (n.d.). *Strategies for formative assessment*. Strategies for Formative Assessment. <https://www.nctm.org/Research-and-Advocacy/Research-Brief-and-Clips/Strategies-for-Formative-Assessment/>
- Wilson, Jonee, and Jessica H. Hunt. 2022. “Marginalized within the Margins: Supporting Mathematics Meaning Making among Students with Learning Disabilities.” *The Journal of Mathematical Behavior* 67 (September): 100982.

Note: All readings for Fall will be accessible through the Canvas website <https://canvas.stanford.edu>. Assignments will also be submitted through this site.

Students with documented disabilities:

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Student Disability Resource Center (SDRC) located within the Office of Accessible Education (OAE). SDRC 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 SDRC as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 650-723-1066, 650-723-1067 TTY).

At a Glance Summary

Date	Pedagogy, Content, & Political Foci	Readings	LP part Due
Class 1 Sept 27	<i>Pedagogy Focus:</i> What you want students to know, be able to do, and experience in your math classroom <i>Political Focus:</i> What math teachers need to know	Ball Gutiérrez	
Class 2 Oct 4	<i>Pedagogy Focus:</i> Tasks that structure opportunities for the things we want for students <i>Political Focus:</i> The environment in which tasks are enacted	Smith and Stein Math Task Analysis Guide Gresalfi and Hand Optional: Tekkumru-Kisal, Stein and Doyle	Set goals
Class 3 Oct 11	<i>Pedagogy Focus:</i> Formative assessing <i>Political Focus:</i> Noticing our noticing	William Louie Optional: van Es	
Class 4 Oct 18	<i>Pedagogy Focus:</i> Lesson architecture and design <i>Political Focus:</i> Math for social justice	Sullivan, Walker, Borcek, and Rennie Koestler et al. OR Bartell et al.	Plan for assessing
Class 5 Oct 25	<i>Pedagogy Focus:</i> Explore <i>Political Focus:</i> Dis/abilities and mathematical authority	Collaborative Math Classroom Chapter 4	Pick a baseline task

		Pick one and the others are optional: Lambert, Lambert and Tan, Wilson and Hunt	
Class 6 Nov 1	<i>Pedagogy Focus:</i> Explore <i>Political Focus:</i> Collaboration and Discussion in Multilingual Math Spaces	Collaborative Math Classroom Chapter 3 Erath et al. Optional: Flores Optional: Bunch and Martin	
Class 7 Nov 8	<i>Pedagogy Focus:</i> Facilitating whole class synthesis discussions <i>Political Focus:</i> Positioning students during discussions	5 Practices, Chapter 6 Gilbertson	Plan explore
Class 8 Nov 15	<i>Pedagogy Focus:</i> Launches and Rehearsal of lesson plan <i>Political Focus:</i> TBD based on interest	Jackson TBD	Full draft of lesson plan (includes synthesis discussion and launch)
No class Nov 22	<i>Fall Break</i>		
Class 9 Nov 29	<i>Pedagogy Focus:</i> Student work analysis and Revision of lesson plan <i>Political Focus:</i> TBD based on interest	No reading Optional: Bullock and Meiners	Bring in student work from piloted lesson