ED 263D | Spring 2024 Elective

CURRICULUM & INSTRUCTION IN MATHEMATICS

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Office Hours: By appointment
Course meeting info: Tuesdays, 3:15-6pm in CERAS 527

Course Overview

This course will focus on preparing pre-service and in-service teachers to transfer their current understanding of teaching in one subject matter to the specific pedagogical strategies used in teaching secondary mathematics. We expect that teachers in this course will not necessarily be subject matter experts, therefore they will be drawing on their experience as teachers to apply their understanding to the exciting and wonderful ideas of mathematics. We hope that students may use this course in a variety of ways: to meet requirements for an additional single-subject credential in mathematics, to develop and consider how to teach integrated units connected to mathematics, and/or to increase their mathematical knowledge for teaching.

This course is designed around three essential questions:

- What is mathematics and what should secondary students learn about mathematics?
- What equity questions and challenges are particularly salient in mathematics classrooms, and how can teachers understand and address these?
- What is meaningful mathematical talk, and how can teachers facilitate it?

This syllabus includes information on: Course Expectations, Grading Rubric, Course Assignments, Course Calendar, Students with Documented Disabilities, and Honor Code

Course Expectations

This course is designed to create a collegial culture in which we can all learn from one another. Students are expected to demonstrate the same level of professionalism as demanded of any credentialed teacher with respect to time management, communication, and integrity. We also expect people to listen carefully and respectfully to their colleagues. Our collective engagement in class activities and discussions will facilitate your learning; we therefore assume regular attendance.

Communication: In general, email your instructor with questions, issues, and inquiries about the course content and assignments. For absences or ongoing issues meeting the course requirements, email both your instructor and the Assistant Director for Secondary. Please make your best effort to communicate proactively, early, and often!

Attendance Policy: Candidates are expected to attend all classes and arrive on time, unless prior arrangements have been made and clearly communicated with course instructors in advance of absence. Unless there are approved

extenuating circumstances, candidates may not miss class for student teaching or school-based events. However, candidates can ask for instructor approval in order to attend important events, e.g., student portfolio presentations, graduation, etc. When classes are missed it is the candidate's responsibility to communicate with their instructor and peers to determine how to stay accountable for learning that was missed. Additional assignments and/or meetings with the instructors may be required to make up for full or partial absences. Lack of communication about issues, delays and absences may negatively impact your grade.

Expectations on Participation: Oral, written, and mathematical participation are not optional in this course. As your instructor, I will do my best to vary the ways in which you participate, but the expectation is that you will share and engage with your peers and instructor. I ask that you treat your peers and instructor in the same manner that you would like to be greeted, be generous in taking up and responding to the ideas of your peers, engaging attentively and without technological distractions, be willing to revise your thinking, and resolve conflict constructively. You will self-evaluate your participation using the rubric below at the midpoint and end of the course. This is not intended to be punitive, but rather a way for you to reflect on how you participate and what motivates you to participate most.

Approach to Feedback: You will receive regular feedback on your work for this course. Please approach feedback as 1) a conversation about your ideas, 2) a space to push your thinking on core ideas from the course, and 3) a context to develop your pedagogical repertoire. Please approach the feedback as formative. Feedback might take the form of specific suggestions or questions to promote your thinking. You are not expected to respond to or take up all of the comments; in fact, we encourage ongoing conversation about the feedback and invite you to disagree, provided that you do so constructively and with clearly articulated reasoning. Overall, I expect you to engage thoughtfully with the feedback and show evidence of growth over time. If you ever have questions about comments, feel free to send an email or set up a time to talk with your instructor. In instances when your work does not meet minimum criteria or expectations, you will be required to revise until it meets the criteria. Your instructor should make it clear when revision is suggested versus required, but please ask if you are ever unsure.

Notes on Grading: As you have learned in STEP, grades can be counterproductive towards meaningful and lasting learning. In this course you will be graded holistically using the rubric below. The rubric is intended as a tool for upholding the course's intentions and expectations and to ground any necessary conversations or interventions, and you will have opportunities midway through the course and at the end to self-assess. I hope to award letter grades of "A" to anyone who does their best work throughout the course. The difference between a "B+" and an "A" will be in the quality of your work, and the effort you demonstrate in executing it. Self-assessment and self-reflection will be the backbone of how we ultimately decide your letter grade. If you honestly account for your areas of strength and improvement, and openly admit if and when you did not do your best work, then you will receive greater flexibility than if you simply say you deserve an "A", but are unconvincing in providing evidence that your work is your best effort. This is undoubtedly somewhat squishy, but it is likely that your instructor will be less harsh on you than you will be on yourself.

Grading Rubric

Grading Domains	A (Frequently exceeding expectations)	A- (Frequently meeting expectations)	B+ (Frequently approaching expectations)	Incomplete (Needs to be corrected)
Preparation	Readings were always completed, annotated, and reflected upon in the Critical Praxis Journal in ways that facilitated maximal student participation. Student frequently brought observations and reflections from their teaching placement and engaged in and supported thoughtful discussion amongst peers.	Readings were usually completed, annotated, and/or reflected upon in the Critical Praxis Journal and referenced in participation. Student sometimes brought observations and reflections from their teaching placement and engaged in discussion about them with peers.	Readings were frequently skimmed, unannotated or not reflected on in the Critical Praxis Journal. Student was often unable to refer to readings as part of class discussion. Student rarely brought observations or reflections from their teaching placement.	Student regularly failed to complete readings ahead of time and was unable to generate questions or comments without relying on peers who actually did the reading. Student relied on the observations or artifacts of their peers to engage in class activities.
Core concepts	Student engaged thoughtfully and critically with course material and demonstrated a strong understanding of the core ideas therein. Student consistently related core ideas to their own teaching placement and effectively used these ideas in their planning.	Student engaged with the course material and generally demonstrated an understanding of the core ideas therein. Student sometimes related core ideas to their own teaching practice and used some of these ideas in their planning.	Student engaged superficially with course material and sometimes demonstrated incomplete understanding of the core ideas therein. Student rarely related ideas to their own teaching practice or used them in their planning.	Student engaged superficially with course material and often demonstrated inaccurate understanding of the core ideas therein. Student was unable to relate core ideas to their own teaching practice and did not use these ideas in their planning.
Inquiry Stance	Student approached assignments/activities from an inquisitive and critical position. Student posed meaningful and consequential questions about their practice and revised their thinking in response to readings, discussion, and placement experiences. Student thoughtfully engaged in self-evaluation and self-reflection used it to significantly advance their teaching practice.	Student approached assignments/activities from an inquisitive position. Student posed meaningful questions about their practice and revised their thinking in response to readings, discussion, and placement experiences. Student engaged in self-evaluation and self-reflection used it to advance their teaching practice.	Student sometimes approached assignments/ activities from an inquisitive position. Student posed questions about their practice, but they were sometimes poorly defined or of little consequence. Students' engagement in self-evaluation and reflection was often superficial or was not used to advance their teaching practice.	Student rarely approached assignments/ activities from an inquisitive position and failed to articulate questions that were of consequence to their teaching practices. Student rarely engaged in self-evaluation and self-reflection and did not use it to advance their teaching practice.
Participation and Interaction	Student always thoughtfully and intentionally participated in oral	Student participated in oral and written interaction and provided	Student sometimes did not participate in oral and written	Student often did not participate in oral and written interaction.

	and written interaction when appropriate and provided constructive and actionable feedback to peers during discussion. Student actively stepped up and stepped back and respectfully invited others into the conversation.	actionable feedback to others during class discussion. Student sometimes stepped up and stepped back and occasionally invited others into discussion.	interaction. Student gave feedback to peers, but it was often not constructive or actionable.	Student missed many opportunities to give feedback to peers.
Professional Organization and Communication	Student took initiative in organizing their time to meet all course requirements and proactively communicated about issues or delays. Student attended all course sessions and completed all assignments on time. Or, if the student was absent or assignments were not completed on time, the student clearly communicated an external cause for delays and made reasonable efforts to finish the work.	Student sometimes organized their time to meet all course requirements and sometimes communicated about issues or delays. Student sometimes required follow-up from instructors to address absences or complete course work. Delays were often due to time management rather than external causes and reasonable efforts were only sometimes made to finish work.	Student often did not organize their time to meet course requirements and often required follow-ups from instructors to meet course requirements. Student often did not make reasonable efforts to finish the work.	Student generally exhibited poor time management and required frequent follow-ups from instructors to meet course requirements. Student rarely made reasonable efforts to finish the work.

Course Assignments

There are 5 major assignments in this class. More details about assignments will be shared in class and in Canvas. All assignments will be used in class on the day they are due, so you will need to have them ready for submission by the start of class.

Critical Praxis Journal: This ongoing journal serves as an opportunity to critically reflect on learnings from the course and how they may apply to your current and future teaching practice, both in teaching math and teaching other subjects. Each week, there will be Critical Praxis Journal prompts to help you synthesize takeaways from the readings. You will also have time to record takeaways and questions in your Critical Praxis Journal at the end of each class session. Specific prompts for each week will be posted in Canvas. ***(Due: weekly)***

Classroom Observation - What does it mean to be smart in math?: For this assignment, you will observe at least one class period in a secondary math classroom of your choice. Your observation will focus on what is–and is not–valued as "smart" or competent in the classroom, and your evidence for this. You will submit a short reflection (2-3 pages) analyzing your observation. ***(Due: Session 4, April 22)***

Eliciting Student Thinking Interview: For this assignment, you will "interview" a student about their mathematical thinking as an opportunity to develop your "eliciting" skills. You will video or audio record your conversation and upload to TORSH Talent, and then use comment tags to analyze your elicitation moves. You will also write a brief reflection (1-2 pages) about your learnings from the experience. ***(Due: Session 7, May 13)***

Discussion Microteach: For this assignment, you will select a mathematical task and facilitate your peers to discuss it. ***Microteaches will take place in class in sessions 8 and 9***; each person will sign up for one of these dates. You will record the microteach and upload to TORSH Talent, and then use comment tags to analyze your discussion facilitation moves. You will also write a brief reflection (1-2 pages) about your learnings from the experience. ***(Due: Tuesday, June 3)***

Annotated Lesson plan: For this assignment, you will revise or create a plan for a math-heavy lesson or lesson sequence using concepts and tools you have learned in this class. Your lesson can be one that you taught this year that you would like to improve, or one that you anticipate teaching in the future. You will submit a lesson plan that is annotated to show how you have incorporated concepts or tools from this class. ***(Due: Friday, June 6)***

Students with Documented Disabilities

Stanford is committed to providing equal educational opportunities for disabled students. Disabled students are a valued and essential part of the Stanford community. We welcome you to this class.

If you experience disability, please register with the Office of Accessible Education (OAE). Professional staff will evaluate your needs, support appropriate and reasonable accommodations, and prepare an Academic Accommodation Letter for faculty. To get started, or to re-initiate services, please visit **oae.stanford.edu**.

If you already have an Academic Accommodation Letter, we invite you to share your letter with us. Academic Accommodation Letters should be shared at the earliest possible opportunity so we may partner with you and OAE to identify any barriers to access and inclusion that might be encountered in your experience of this course.

If you have learning needs or accommodations that are not already addressed in the design of the class, please contact your instructor (regardless of whether these accommodations are documented with the OAE). We will work together to find ways for you to meet the learning goals of the course.

Honor Code

The Honor Code is an undertaking of the students, individually and collectively:

- that they will not give or receive aid in examinations; that they will not give or receive unpermitted aid in class work, in the preparation of reports, or in any other work that is to be used by the instructor as the basis of grading;
- that they will do their share and take an active part in seeing to it that others as well as themselves uphold the spirit and letter of the Honor Code.

The faculty on its part manifests its confidence in the honor of its students by refraining from proctoring examinations and from taking unusual and unreasonable precautions to prevent the forms of dishonesty mentioned above. The faculty will also avoid, as far as practicable, academic procedures that create temptations to violate the Honor Code.

While the faculty alone has the right and obligation to set academic requirements, the students and faculty will work together to establish optimal conditions for honorable academic work.

COURSE CALENDAR

Date	**Topic**	**Readings & Assignments** *See Canvas for links to readings & assignments*
1 April 1	**How do my experiences with math influence me?**	None
2 April 8	**What does it mean to be smart in math?**	Reflect in your Critical Praxis Journal on the readings below ● Reuf, *How Ms. Mayen and Her Students Co-Constructed Good-at-Math* ● Shah, *"Asians Are Good at Math" Is Not a Compliment: STEM Success as a Threat to Personhood* Optional: ● Gutstein, *Connecting community, critical, and knowledge in teaching mathematics for social justice* ● Dunleavy, *High School Algebra Students Busting the Myth about Mathematical Smartness: Counterstories*

		to the Dominant Narrative "Get It Quick and Get It Right"
3 April 15	**What is math? What should we teach in math class?**	Reflect in your Critical Praxis Journal on the readings below ● Cheng, *How to Bake Pi*, Introduction & Chapter 1 ● Common Core State Standards for Mathematics: Introduction and Standards for Mathematical Practice Optional reading: ● National Research Council, *5 Strands of Mathematical Proficiency* [we will have time to read this in class, so reading ahead is optional]
4 April 22	**How can we figure out what students know?**	Reflect in your Critical Praxis Journal on the readings below: ● Munson, *In the Moment*, Ch 3: Eliciting & Interpreting **Assignment due: Classroom Observation - what does it mean to be smart in math?**
5 April 29	**How can we open access to mathematical tasks? What will students do with those tasks?** In class: mid-course self-reflection	Reflect in your Critical Praxis Journal on the readings below: ● *5 Practices for Orchestrating Productive Mathematics Discussions*, Chapter 2 (full chapter) Optional reading: ● Boaler, *Mathematical Mindsets, Chapter 5: Rich Mathematical Tasks*
6 May 6	**How can we use what students know to deepen learning?**	Reflect in your Critical Praxis Journal on the readings below: ● *5 Practices for Orchestrating Productive Mathematics Discussions,* Introduction & Chapter 1 ● Munson, *In the Moment*, Ch 4: Nudging
7 May 13	**How can we use what students know to facilitate discussion?**	Reflect in your Critical Praxis Journal on the reading below: ● *5 Practices for Orchestrating Productive Mathematics Discussions*, Chapter 5 ● Herbel-Eisenmann and Shah, *Detecting and Reducing Bias in Questioning Patterns* **Assignment due: Eliciting & Interpreting Student Thinking Interview**

8 May 20	**How and when should we use "real world" context in math class?"** Microteaches Part 1	Do the math tasks provided by your peers who will be microteaching Reflect in your Critical Praxis Journal on the readings below: ● Rubel & McCloskey, *Contextualization of mathematics: which and whose world?* ● Wilkerson et.al, *Data Story Bytes* Optional: ● Nabb et al, *The Condo Problem: Is This Culturally Responsive Teaching?*
9 May 27	**TBD - based on student interest** Microteaches Part 2	Do the math tasks provided by your peers who will be microteaching Readings TBD
10 June 3	**Reflection & Closure** In class: end-of-course self-reflection, sharing annotated lesson plans	Readings TBD **Assignment due Tuesday, June 3:** ● **Discussion microteach video analysis & reflection** **Assignment due Friday, June 6:** ● **Annotated lesson plan**