Math 514: Teaching Undergraduate Mathematics (1 credit)
Fall 2026

"While the problem of humanization has always, from an axiological point of view, been humankind's central problem, it now takes on the character of an inescapable concern. Concern for humanization leads at once to the recognition of dehumanization, not only as an ontological possibility but as an historical reality. And as an individual perceives the extent of dehumanization, he or she may ask if humanization is a viable possibility. Within history, in concrete, objective contexts, both humanization and dehumanization are possibilities for a person as an uncompleted being conscious of their incompletion. But while both humanization and dehumanization are real alternatives, only the first is the people's vocation."

— Paulo Freire, 1970

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Office Hours: Official (guaranteed) hours, Mon & Wed 3-4, Tue 9-11, also make an appointment or come see me.

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Course Description

Knowing mathematics is an insufficient qualification for teaching mathematics, and this course seeks to close that gap. In this course, we will explore the best practices in the teaching of mathematics to undergraduate students, and apply this knowledge to particular problems of teaching mathematics at a mid-sized public university in the US.

Student Learning Objectives

1. Students will understand the role of service mathematics courses in the undergraduate curriculum.
2. Students use current best practices to plan for instruction in undergraduate mathematics courses.
3. Students will choose appropriate learning activities and explain their implementation according to best practices in the discipline.
4. Students will choose appropriate methods to assess student learning according to best practices in the discipline.

Texts

- M. Svinicki and W. J. McKeachie, *Teaching Tips*, 14th Edition, Cengage 2013, ISBN 978-1133936794
- M. L. Abell, et al, eds., *MAA Instructional Practices Guide*, MAA, 2018, ISBN 978-1-61444-325-4 (Available free online at `https://www.maa.org/programs-and-communities/curriculum%20resources/instructional-practices-guide`)

Schedule

For most meetings, there will be assigned readings, as well as questions that you should come prepared to discuss. **YOU MUST BE READY TO DISCUSS THE MATERIAL IN CLASS.** A portion of your grade will depend on this. "Participation" in class, for the purposes of grading, is defined as attending regularly and for the full time, and regularly making useful contributions to the class discussion. I will inform you by e-mail (whatever address Salukinet has for you) any time I feel that you are in danger of losing points on this, and we can talk about what is needed to correct the issue. You do not put yourself in danger by missing class a single day, or by not having much to say on a single topic.

August 25 Undergraduate education and the role of the University Core and service courses. *Reading: Math Courses and University Core Curriculum sections from SIUC Undergraduate Catalog; Svinicki-McKeachie Chapter 1–3.*

September 1 Planning for Instruction: Introduction and Student Outcomes. *Reading: Instructional Practices Guide, DP.1–DP.2; Svinicki-McKeachie Chapter 11*

September 8 Planning for Instruction: Getting to the Outcomes. *Reading: Instructional Practices Guide, DP.3–DP.4*

September 15 Planning for Instruction: The Inclusive Course. *Reading: Instructional Practices Guide, XE.1–XE.4; Svinicki-McKeachie Chapter 12–13*

September 22 Instructional Methods: Student Engagement. *Reading: Instructional Practices Guide CP.1; Svinicki-McKeachie Chapter 5, 6, 14; Freeman, et al, "Active learning increases student performance in science, engineering, and mathematics," PNAS 111 (2014), pp. 8410–8415*

September 29 Instructional Methods: Mathematical Tasks. *Reading: Instructional Practices Guide CP.2; Svinicki-McKeachie Chapter 15*

October 6 Instructional Methods: Technology. *Reading: Instructional Practices Guide XT.1–XT.5; Svinicki-McKeachie Chapter 17*

October 13 Assessment: The Assessment Cycle. *Reading: Instructional Practices Guide AP.1–AP.2; Svinicki-McKeachie Chapter 7–8*

October 20 Assessment: Summative Assessment and Grading. *Reading: Instructional Practices Guide AP.3–AP.5; Svinicki-McKeachie Chapter 9–10*

October 27 Ethics and Law. *Reading: Svinicki-McKeachie Chapter 22*

November and December Discussion of additional cases and considerations, as raised by the class and your experience; completion of assignments.

In addition, each student will observe a course numbered strictly below 300 in the School of Mathematical and Statistical Sciences taught by a faculty member, and will write a paper reflecting on certain aspects of what you see.

Assessment

Students will complete the following assignments over the course of the semester:

1. A guided reflection paper on each observation, using knowledge from class sessions to understand what goes on in the classroom
2. A teaching statement, summarizing the student's professional opinions on how to teach well in undergraduate mathematics courses
3. One live lesson evaluated by the instructor

Grading

Grades will be calculated from the following sources:

Participation	100
Observation papers	100
Teaching statement	100
Sample lesson	100
	400 pts

I will make the following guarantees about letter grades. I may decide to lower these criteria (i.e. give a higher grade than the one shown here, if I see that the questions were hard enough that lower numbers more accurately reflect my true standards), but will never raise them.

Percent of total	Grade
90–100	A
80–89	B
70–79	C
60–69	D
≤ 59	E

Student Engagement

At the times announced above under "Office Hours," I plan to be in my office, and my first priority at that time will be talking with my students. I will also usually be in my office most business hours, and if you find me there, I will usually be able to make time for you. You can make sure I'm available by calling or e-mailing in advance.

I will make a serious effort to reply to e-mail within one business day (Monday–Friday, excluding holidays and university closures). If your e-mail is not getting answered in the time you need (whether one business day has passed or not), call me by telephone and I will try to help.