

Math 514: Teaching Undergraduate Mathematics (1 credit) Fall 2023

“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 incompleteness. 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, Monday 1–3, Tuesday 2–3, Wednesday 1–4; 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 each meeting, 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 29 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 5 Planning for Instruction: Introduction and Student Outcomes. Reading: **Instructional Practices Guide, DP.1-DP.2**; **Svinicki-McKeachie Chapter 11**

September 12 Planning for Instruction: Getting to the Outcomes. Reading: **Instructional Practices Guide, DP.3-DP.4**

September 19 Planning for Instruction: The Inclusive Course. Reading: **Instructional Practices Guide, XE.1-XE.4**; **Svinicki-McKeachie Chapter 12-13**

September 26 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**

October 3 Instructional Methods: Mathematical Tasks. Reading: **Instructional Practices Guide CP.2**; **Svinicki-McKeachie Chapter 15**

October 10 Instructional Methods: Technology. Reading: **Instructional Practices Guide XT.1-XT.5**; **Svinicki-McKeachie Chapter 17**

October 17 Assessment: The Assessment Cycle. Reading: **Instructional Practices Guide AP.1-AP.2**; **Svinicki-McKeachie Chapter 7-8**

October 24 Assessment: Summative Assessment and Grading. Reading: **Instructional Practices Guide AP.3-AP.5**; **Svinicki-McKeachie Chapter 9-10**

October 31 Ethics and Law. Reading: **Svinicki-McKeachie Chapter 22**

In addition, each student will make several observations of courses numbered strictly below **300** in the School of **Mathematical and Statistical Sciences** taught by a faculty member. For each observation, you 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 |

Syllabus Attachment

Fall 2023

MISSION STATEMENT FOR SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

SIU embraces a unique tradition of access and opportunity, inclusive excellence, innovation in research and creativity, and outstanding teaching focused on nurturing student success. As a nationally ranked public research university and regional economic catalyst, we create and exchange knowledge to shape future leaders, improve our communities, and transform lives.

IMPORTANT DATES:

Semester Classes Begin:08/21/2023

Last day to add full-term course (without Dean's signature):08/27/2023

Last day to withdraw from the University with a full refund:09/01/2023

Last day to drop a full-term course for a credit/refund:09/03/2023

Last day to drop a full-term course (W grade, no refund):10/29/2023

Final examinations:12/11–12/15/2023

Note: Please verify the above dates with the Registrar calendar and find more detailed information on deadlines at <http://registrar.siu.edu/calendars>. For add/drop dates that apply to shorter-than-full-term courses, please look at the Schedule of Classes search results at <http://registrar.siu.edu/schedclass/index.php>

FALL SEMESTER HOLIDAYS:

Labor Day 09/04/2023

Thanksgiving Break 11/18-11/26/2023

DIVERSITY: Southern Illinois University Carbondale's goal is to provide a welcoming campus where all of our students, faculty and staff can study and work in a respectful, positive environment free from racism and intimidation. For more information visit: <http://diversity.siu.edu>. Additional [informational flyer](#).

DISABILITY SUPPORT SERVICES: SIU Carbondale is committed to providing an inclusive and accessible experience for all students with disabilities. Disability Support Services coordinates the implementation of accommodations. If you think you may be eligible for accommodations but have not yet obtained approval please contact DSS immediately at (618) 453-5738 or <https://disabilityservices.siu.edu>. You may request accommodations at any time, but timely requests help to insure accommodations are in place when needed. Accommodations and services are determined through an interactive process with students and may involve consideration of specific course design and learning objectives in consultation with faculty.

MILITARY COMMUNITY: There are complexities of being a member of the military community and also a student, and military and veteran related developments can complicate academic life. If you are a member of the military community and in need of accommodations please visit Veterans Services at <http://veterans.siu.edu/>.

STUDENT MULTICULTURAL RESOURCE CENTER: The Student Multicultural Resource Center serves as a catalyst for inclusion, diversity and innovation. As the Center continues its work, we are here to ensure that you think, grow and succeed. We encourage you to stop by the Center, located in the Student Services Building Room 140, to see the resources available and discover ways you can get involved on the campus. Visit us at <https://smrc.siu.edu/>.

SALUKI CARES: The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIUC will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For information on Saluki Cares: Call (618) 453-2461, email siucares@siu.edu, or <http://salukicare.siu.edu/>.

SAFETY AWARENESS FACTS AND EDUCATION: Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: <http://safe.siu.edu>.

SIU COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS): Mental health counseling services are available by calling [CAPS](tel:6184535371) at (618) 453-5371. CAPS offers confidential same-day services and ongoing counseling. For after hours crisis care, students are encouraged to call 988, 911, or present to their nearest emergency room.

WITHDRAWAL POLICY (Undergraduate Only): Students who officially register for a session must officially withdraw from that registration in a timely manner to avoid being charged as well as receiving a failing grade for those classes. An official withdrawal must be initiated by the student, or on behalf of the student through the academic unit, and be processed by the Registrar's office. For the proper procedures to follow when dropping courses and when withdrawing from SIUC visit: <http://registrar.siu.edu/students/withdrawal.php>.

SIUC'S EARLY WARNING INTERVENTION PROGRAM (EWIP): Students enrolled in courses participating in SIUC's Early Warning Intervention Program might be contacted by University staff during a semester. More information can be found at the University Core Curriculum's Overview webpage: <https://corecurriculum.siu.edu/for-faculty/>.

EMERGENCY PROCEDURES: We ask that you become familiar with Emergency Preparedness at SIU. Emergency response information is available on posters in buildings on campus, on the Emergency Preparedness at SIU website, and through text and email alerts. To register for alerts visit: <http://emergency.siu.edu/>.

CATALOGS:

catalog.siu.edu

gradcatalog.siu.edu - Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please refer to the graduate catalog.

CENTER FOR LEARNING AND SUPPORT SERVICES:

Tutoring: <https://class.siu.edu/>

Math Labs: <http://math.siu.edu/courses/course-help.php>

WRITING CENTER: <http://write.siu.edu/>

PLAGIARISM: See the Student Conduct Code: <http://srr.siu.edu/student-conduct-code/>

INCOMPLETE POLICY (Undergraduate Only): <http://registrar.siu.edu/grades/incomplete.php>

REPEAT POLICY: <http://registrar.siu.edu/students/repeatclasses.php>

MORRIS LIBRARY HOURS: <https://libcal.lib.siu.edu/hours/>

ADVISEMENT: <http://advisement.siu.edu/>

SIU ONLINE: <https://online.siu.edu/>

Need additional help with an issue? Visit **SALUKI SOLUTION FINDER** at <http://solutionfinder.siu.edu/>