



College of Natural Science

MICHIGAN STATE UNIVERSITY

TEACHING COLLEGE SCIENCE Spring 2025

ISE 870 001

2 Credit Hours

Wednesdays, 11:30 am – 1:20 pm

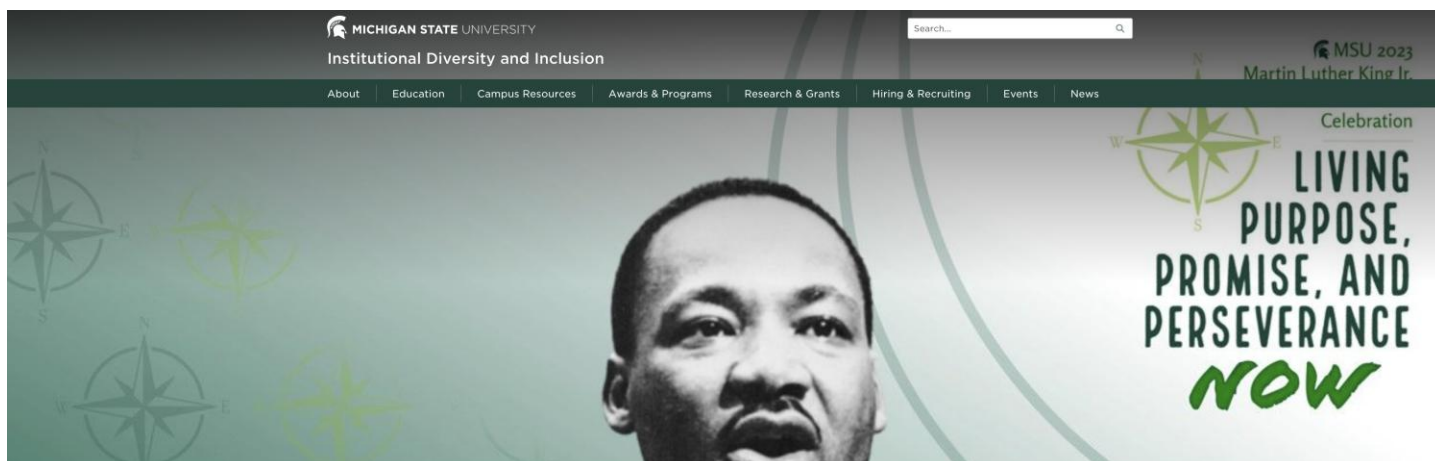
North Kedzie N110

Instructor:

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Office hours: Wednesdays, 10:00 am – 11:00 am
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General Course Goal

To introduce participants to the theory and practice of student-centered college teaching. Students will be able to use an understanding of how people learn, the basics of curriculum design, and a range of teaching and assessment strategies and instructional technologies to plan for, teach, and analyze effective science teaching. In addition, students will discuss the roles and responsibilities of teaching within the university setting.



We will treat every individual with respect. Diversity can refer to multiple ways that we identify ourselves, including but not limited to race, color, national origin, language, sex, disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. Each of these diverse

identities, along with many others not mentioned here, shape the perspectives our students, faculty, and staff bring to our campus. MSU welcomes a full spectrum of experience, viewpoints, and intellectual approaches because they enrich the conversation as they challenge us to think differently and grow. We will work to promote diversity, equity, and inclusion not only because diversity fuels excellence and innovation, but because we want to pursue justice. We acknowledge our imperfections while we also fully commit to the work, inside and outside of our classrooms, of building and sustaining a campus community that increasingly embraces these core values.

The university encourages anyone who experiences or observes unfair or hostile treatment based on identity to speak out for justice and support. You may share your experiences using the following resources.

- MSU Ombudsperson: ombud.msu.edu
- MSU Institutional Diversity and Inclusion: inclusion.msu.edu
- MSU College of Natural Science Diversity Equity and Inclusion: <https://natsci.msu.edu/diversity-equity-and-inclusion/index.aspx>

Please know that all attempts will be made to be flexible with due dates and exam dates to ensure proper observation of ALL religious observances. It is your responsibility to notify me no later than two weeks prior to a religious observance of any accommodations you may need regarding a due date or exam date. You can find more information regarding religious observances [here](#).

Course Objectives

Students will:

1. Become familiar with theories of learning, teaching, and student development
2. Understand the wide range of teaching approaches
3. Incorporate concepts of bias and equity into thinking about teaching
4. Work collaboratively to examine course concepts and review peer's work
5. Synthesize learning through creation of a teaching portfolio

Weekly Format

Course work will be split into five areas each week:

1. Reading or Writing – to be done prior to class
2. Discussion – led online and in class by that week's discussion leaders
3. Lecture – kept as brief as possible
4. Activity – done in class; individual, in small groups, or as a whole class

Assignments

All assignments for this course build toward one final product: a teaching portfolio. Unless otherwise noted, all assignments will be:

1. Due by the end of the day on Fridays
2. Turned in through D2L

Grading

All assignments will be graded on a 10-point scale, with the relative contribution of different assignments to your final grade broken out below. I understand that for most of you this will be your first time working on a course portfolio. Your best effort will always earn you 10/10.

Specific Expectations

- Do your best to produce high-quality work, although you are not expected to “know” how to teach. Simply try!
- Consider this course an opportunity to learn how to collaborate with your colleagues, by providing the sort of feedback on their portfolios that you hope to get for yours.
- When “drafts” of portfolio sections or reviews of other portfolios are due, consider this a “final draft.” A final draft is your best effort, free of grammatical and formatting errors. This doesn’t mean you can’t revise these for your final product, or course! You will then be well on your way to a final teaching portfolio.

Text

All readings will be made available on D2L.

In-Class Discussion and Leadership

Class time will primarily consist of discussion and interactive group work. With very little formal lecturing. As a result, more emphasis is placed on you to prepare for and participate in online and in-class discussions. Successful teaching portfolios – particularly in a form useful for job applications – require each member to both participate and contribute. Each week, two students will serve as a discussion leader. Discussion leaders are responsible for guiding the in-class discussion based on the week’s topic and driving reading. An example of this expectation will be modeled by me during our first meeting.

General Course Policies

Let Me Know Who You Are: I have a course list that the registrar has provided. This list contains your official names. We will all introduce ourselves at the beginning of the semester. Please let the class know how you prefer to be addressed as well as anything else you think is important to know about you.

Attendance Policy: It is expected that you will attend ALL weekly meetings on Wednesdays from 11:30 am – 1:20 pm. However, I do understand that times are unique right now due to various reasons. Please notify me as soon as possible regarding an absence.

Late Policy: As you will see when you become the instructor of a course, accepting late work creates additional complications for you and the students. Therefore, assignments in this class should be treated as deadlines. Please notify me in advance if it is going to be difficult for you to adhere to a specific deadline.

Academic Dishonesty: *The university policy on academic honesty will be followed when dealing with integrity issues in class.* I encourage you to work with other students in the class as you read the assigned articles and search the literature. However, your assignments must be written in your own words. Copying material from any source (online or otherwise) without citation will be considered plagiarism. Students (and faculty!) often misunderstand plagiarism; therefore, please refresh your understanding before doing any writing for this course. See this site for MSU guidance:

<https://ombud.msu.edu/sites/default/files/content/Plagiarism-What-is-it.pdf>

Course Outline/Schedule: Note that the schedule is tentative. I will update it and inform you of changes as needed.

Date	Topic, Objectives, and Labs	Assignments and Readings
Jan 15	Class 1 – In Person <ul style="list-style-type: none"> Modeling Instruction 	Readings: <ul style="list-style-type: none"> Fernbach

	<ul style="list-style-type: none"> • Lab: Traditional vs. Modeling 	<ul style="list-style-type: none"> ○ Hestenes
Jan 22	<i>Class 2</i> <ul style="list-style-type: none"> • Problem-Based Learning • Lab: Traditional vs. PBL 	Readings: <ul style="list-style-type: none"> ○ Problem Based Learning
Jan 29	<i>Class 3</i> <ul style="list-style-type: none"> • Argument-Driven Inquiry • Claim, Evidence, Reasoning • Lab: Traditional vs. ADI/CER 	Readings: <ul style="list-style-type: none"> ○ Argument Driven Inquiry
Feb 5	<i>Class 4</i> <ul style="list-style-type: none"> • Learning Theory – Guest: Jun Fu • Lab: Theory Activity 	
Feb 12	<i>Class 5</i> <ul style="list-style-type: none"> • Assessing Student Learning • Lab: Writing Assessments 	Readings: <ul style="list-style-type: none"> ○ Chapter 2: The Nature of Assessment and Reasoning from Evidence
Feb 19	<i>Class 6</i> <ul style="list-style-type: none"> • Backward Design • Lab: Aligning Objectives – Lessons – Assessments 	Due: <ul style="list-style-type: none"> • Assessment Questions Readings: <ul style="list-style-type: none"> • The Backward Design Process
Feb 26	<i>Class 7</i> <ul style="list-style-type: none"> • Developing a Lesson Plan • Lab: Construct a Lesson Plan for Microteaching I 	
Mar 12	<i>Class 8</i> <ul style="list-style-type: none"> • Deliver Microteaching 	Due: <ul style="list-style-type: none"> • Microteach Lesson Plan Final Draft
Mar 19	<i>Class 9</i> <ul style="list-style-type: none"> • Looking at Teaching – Guest: Claudia Vergara • Lab: Observing a Course 	
Mar 26	<i>Class 10</i> <ul style="list-style-type: none"> • Teaching Philosophy • Lab: Teaching Philosophy 	Due: <ul style="list-style-type: none"> • Course Observation
Apr 2	<i>Class 11</i> <ul style="list-style-type: none"> • Designing a Course • Lab: Syllabus Investigation 	Due: <ul style="list-style-type: none"> • Teaching Philosophy
Apr 9	<i>Class 12</i> <ul style="list-style-type: none"> • Developing a Lesson Plan • Lab: Construct a Lesson Plan for Final Project 	Due: <ul style="list-style-type: none"> • Course Syllabus
Apr 16	Final Project Presentations	
Apr 23	Final Project Presentations	
5/1	No Final Incorporate Comments into Final Portfolio	Due: <ul style="list-style-type: none"> Final Portfolio

Microteach Experiences

You will work with a partner to develop and execute one, student-centered, mini-lecture lesson (~ 10 min) in your content area of expertise. This lesson will be supported by a lesson plan that you will submit along with your presentation. Although you may select any course to develop these lessons for, I would encourage you to select an introductory undergraduate course

Final Project

You will work with a partner to write a syllabus for a course. In addition, each of you will write a lesson plan for the same course. You will teach a portion of one of the lesson plans to the class on April 16 or April 23. The written project is due May 1. For more details, see the Final Project Guidelines.

Teaching Portfolio

You will put together a teaching portfolio that documents your teaching experience to date as well as your teaching philosophy. It should also be organized so that you can easily add artifacts from additional experiences. The teaching portfolio is due May 1. For more details, see the Teaching Portfolio Guidelines.