

CI 1906 Course Syllabus

Exploring Diversity, Democracy, and Social Issues in STEM Education

– 3 credits

Fall 2025

Tuesday-Thursday: 02:30 PM - 04:25 PM **R260 LES** (Learning and Environmental Sciences Bldg.

Audience and prerequisites:

This course is intended for first year undergraduate students who have an interest in STEM education but are unsure if this field of study is open enough for a GenZ student with high interest in social issues and values. Multiple approaches for integrating Science, Technology, Engineering, and Mathematics (STEM) with local and global issues will be explored. Students, with faculty support, will engage in simulation activities designed to highlight the need for global perspectives and integrated learning among STEM and the social sciences. The faculty are aware that students with integrated global studies in their chosen discipline will be more marketable upon graduation and be more flexible in living in a multicultural, anti-racist, globalized world. There are no prerequisites for this course, students should just have an interest in exploring STEM education with global perspectives.

Instructors

Irene Duranczyk

College of Education and Human Development

E-mail: duan026@umn.edu

Phone: 612-626-4421

Web site: <http://www.cehd.umn.edu/people/duan026/>

Office hours: [make an appointment](#)

Office: 1954 Buford Ave. Room: 320F

I welcome you to contact me outside of class for office hours. You may email me, call my office, join me or invite me for zoom sessions, and you are always welcome to leave a message by phone or email if we miss contacting each other.

College of Education & Human Development Mission Statement

The new College of Education and Human Development is a world leader in discovering, creating, sharing, and applying principles and practices of multiculturalism and multidisciplinary scholarship to advance teaching and learning and to enhance the psychological, physical, and social development of children, youth, and adults across the lifespan in families, organizations, and communities.

Department Mission Statement

In adhering to the Land Grant mission of the university, the Department of Curriculum and Instruction fosters an intellectual community of nationally and internationally-recognized scholars who:

- advance understanding of teaching and learning through research and other scholarly endeavors, including the scholarship of teaching and the scholarship of public engagement,
- support the preparation and development of scholars and educators who are leaders in their disciplines, schools, and community settings, and who are able to collaborate across disciplines to benefit those they serve,
- engage in multidisciplinary pursuits with partners in P-16 schools, communities, professional associations, and other educational institutions to improve the quality of education for all learners,
- address the cultural, linguistic, social, political, technological, and economic factors that influence teaching, learning, and research, and
- foster educational practice that leads to a more democratic and just society.

Statement on Commitment to Social Justice

The Department of Curriculum and Instruction is committed to promoting social justice and dismantling racial, socioeconomic, gender and language injustices in education. We actively work to eliminate barriers and obstacles created by institutional discrimination. We are committed to developing future teachers, practitioners, technologists and researchers who are equipped to identify and challenge systems and structures of racism and oppression in their field(s), locally, and globally.

Course Description - HyFlex

GenZ, Yes, there is a framework for exploring Diversity, Democracy, and Social Justice issues within STEM education. You can pursue a degree in STEM education and have an impact in our democracy and/or world affairs. This seminar will explore ways diversity, democracy, and social issues intersect and live in STEM education. We will engage in project based activities that increase our knowledge and skill in exploring social values and STEM education. We will create opportunities to showcase our products while we synthesize STEM skills with a systematic inquiry of our world.

This course is designed to engage you and other domestic and international students in multiple ways of thinking and doing for the expressed purpose of (1) infusing a global, multicultural, and anti-racist perspective in STEM education and (2) explore present day challenges from a STEM education and social justice perspective.

You will have exposure and experiences with international students, international-based research, and STEM simulations. This course will prepare you to embrace intercultural competency and its impact on your self-awareness, interactions in social settings, success in university course work, engagement in research projects, and STEM education career choices.

Course Goals, Objectives and Expectations

Upon completion of this course, I hope that you will have the skills and experiences necessary to infuse global perspectives in your undergraduate curriculum (academic and extracurricular programs and activities). Some of the specific skills I hope you will obtain in this course are listed below. Be a critical consumer of information. All of our course goals, objectives, and expectations should help the process of honing our thoughts and actions for a critical life. It is my hope that you will use these skills in your daily life. Most importantly we will evolve together:

- To explore a sense of identity, place, community, and agency by/while exploring STEM education within a social justice context.
- To develop skills and identify techniques for infusing global perspective in STEM education and participate in creating an anti-racist world.
- To be prepared to use the higher education experience to define our place in the world.
- To build and use a framework of general knowledge to understand diverse philosophies and cultures within and across societies and how it lives in STEM education.
- To increase skills for effective citizenship and life-long learning within the context of international challenges that can be addressed within a STEM education.
- To understand the importance and role of liberal education particularly as we explore internationalization and global perspectives in STEM education.
- To examine global affairs through a comparative framework.

University of Minnesota Undergraduate Student Learning Outcomes

This course addresses the following U of M Undergraduate Student Learning Outcomes (and assesses the outcome in bold):

Can identify, define, and solve problems

Can locate and critically evaluate information

Understands diverse philosophies and cultures within and across societies

Can communicate effectively

Understand the role of creativity, innovation, discovery, and expression across disciplines

Have acquired skills for effective citizenship and life-long learning.

Textbook and Materials

There is no textbook at this time. There are plenty of library resources listed below that will be used to add depth to the course. You will have assigned reading as listed below or as we generate together in class sharing our perspectives and knowledge base. Video and audio files will round out our materials for reflection and knowledge building. Be sure to suggest other materials that you find helpful in exploring the course objectives.

Technology

Course Website:

A Canvas website has been established for this course. You can access Canvas by going to <https://canvas.umn.edu/> Click on Login to enter your U of M username and password. Then click on CI 1906 Fall 2024 to access the course website. All course materials and communication resources can be accessed from Canvas.

The syllabus, assignments, technology resource guides, grades, and other important resources are posted on Canvas. In addition, this is where you will upload the course assignments you turn in.

Email:

Email can be used as a source of communication among us for this course. As such, I commit to checking my email frequently and will be expecting you to check your email frequently (i.e., at least once per day). As per the University policy, “students are responsible for all information sent to them via their University assigned email account. If a student chooses to forward their University email account, he or she is responsible for all information, including attachments, sent to any other email account.”

Technology Policy:

The course uses technology on a regular basis during both instruction and assessments (e.g., homework assignments, projects, etc.). Please contact me if the technology resources in Canvas inadequately serve you. The general university policy is that, “*Student difficulty with obtaining or operating the various software programs and technologies will not be acceptable as an excuse for late work.*” So, please plan ahead so that resources can be brought to bear to resolve technological issues. Due to the variation in computer types and systems, I may not be able to assist in troubleshooting all problems you may have but I can guide you to [university technology resources](#) that will assist you. Key to success is to plan ahead.

Artificial intelligence (AI) language models, such as ChatGPT, may be used for some assignments with appropriate citation. Examples of citing AI language models are available at: <https://libguides.umn.edu/chatgpt> or <https://apastyle.apa.org/blog/how-to-cite-chatgpt>. You are responsible for fact checking statements composed by AI language models. Most importantly, does the content generated reflect your thoughts, opinions, and is it verifiable. I will explicitly state when it is inappropriate to use AI. For most assignments I will want your AI prompt to be included in your submission.

COURSE OUTLINE, TOPICS, AND ASSIGNMENTS

Below is an outline of assignments, perspective, a brief description of the purpose, and the points assigned to each of the assignments.

Summary of Graded Assignments

Assignment	Global Perspective Criteria	How it will address the GP	Individual or group?	# of points
Personal Reflections - 9 Assigned	Reflecting on the shared sense of responsibility required to build and maintain community.	Reflections will be based on contemporary, cultural short stories, identity readings, intercultural development inventory, and other major, course events using a comparative framework.	Individual	25
Paper / Video / Project infusing international engagement with STEM educational and career goals	Students discuss and reflect on the implications of issues raised by the course materials for their own lives.	Students discuss and reflect on the implications of international engagement with their educational and career goals.	Individual or group	15
Engagement/ Leadership in the International Students Day Conference or other type of project.	Thinking ethically about important challenges facing our society and world Fostering a stronger sense of our roles as historical agents.		Individual or group	50
Oral and written Report on on- or off-campus organizations or supports STEM education and the internationalization of your undergraduate experience	Connecting knowledge and practice.	Your choice of organization to report on and relate to your goals. Should be presented in such a way that it is of interest to your classmates.	individual	15
Public Presentation	Examine STEM topic balancing global perspectives through a comparative framework	A presentation on an intersection between STEM education and a local, national, or global issues.	Individual or group	25
TOTAL				130
Attendance	Increase skills in effective intercultural communication	Lack of participation in class discussions		-5/week

Course Readings/Resources

Adichie, C. N. (2009). The danger of a single story.

https://www.ted.com/talks/chimamanda_adichie_the_danger_of_a_single_story

Anders, G. You can do anything: The surprising power of a “useless” Liberal Arts Education. (2017). Little, Brown & Company. (excerpts)

Appiah, K. A. (2015). Race is not Biology. <https://www.facinghistory.org/resource-library/video/race-not-biology-kwame-anthony-appiah>

Crowell, R. (2024). Can mathematicians help to solve social-justice problems?. Nature. doi: <https://doi.org/10.1038/d41586-024-01494-7>

Feinberg W. STEM and the Democratic Aims of Science Education. In: *Educating for Democracy*. Cambridge: Cambridge University Press; 2023:101-118. doi:10.1017/9781009219297.008

Association of American Colleges and Universities (2007). What is a liberal education? Retrieved from http://www.aacu.org/leap/What_is_liberal_education.cfm

International Council of Students in Great Britain (1941). *International Students' Day*. [Printed by R. Madley].

Picture a Scientist (2020) Documentary highlighting gender inequality in science. (<https://video.alexanderstreet.com/watch/picture-a-scientist>)

We will explore real data and engage with peers, domestically or internationally with the following and possible other example real world simulations:

The world Climate Simulation (<https://www.climateinteractive.org/world-climate-simulation/#overview>) and possibly engage in this activity with undergraduate students from Russia and China.

DataX to engaging **students** in building scientific explanations based on real-world open **science** data. <https://www.ourdatax.org/>

Resources from the Zinn Education Project - <https://www.zinnedproject.org/themes/math/>

Resources from Indigenous STEAM - <https://indigenousteam.org/tools-resources/>

Resources to explore, visualize, and learn from data to make data literacy accessible for *all* students. [CODAP - Common Online Data Analysis Platform](#)

An independent educational non-profit resource for fighting global misconceptions.
[Gapminder](#)

Mathematics Education Innovation [Data Sets](#)

Global data from people around the world [100 People: A World Portrait](#)

Global challenges framed in ways progress is made [Beautiful News](#)

Math activities for exploring our world [Skew the Script](#)

NetLogo and NetLogo Web interface with individual students. Group-Based Cloud Computing (GbCC) is an online platform powered by NetLogo Web that allows students to work with models individually or collaboratively. This allows students to author and share changes to models. <https://www.gbccstem.com/>

The MathFinder app currently in development will be a powerful tool for informal STEM learning. It will gamify the process of experiencing and creating Math Walks, combining research-backed learning principles with an engaging storyline to get kids interested in the math concepts that are all around them.
<https://gomathfinder.org/>

Course Schedule

Date	Topic	Readings and Assignments	Due Date
Week 1 Sept 3-6	Overview of course and Canvas - Building Community		
Week 2 Sept 9-13	Introductory Readings - Scope of possibilities for this course		
Week 3 Sept 16-20	Narrowing our choices to “2”		
Week 4	Developing a plan for		

Date	Topic	Readings and Assignments	Due Date
Sept 23-27	working backwards from our stated goals for a public presentation		
Week 5 Sept 30 - Oct 4	Identification of off or on campus sites to support project plans		
Week 6 Oct 7-11	Continued research and presentation on our agreed upon focus of study		
Week 7 Oct 14-18	Visiting off or on campus sites to support project plans		
Week 8 Oct 21-25			
Week 9 Oct 28 - Nov 1			
Week 10 Nov 4-8 Elections on Nov 5th asynchronous Class Time - 1.5 hours			
Week 11 Nov 11-15 Asynchronous Class Time on Nov 14th - 1.5 hours)	Possible international conference??		
Week 12 Nov 18-21	Possible international conference??		
Week 13 Nov 25-27 Asynchronous Class Time on Nov. 26th - 1.5 hours)	completion of projects and presentations		

Date	Topic	Readings and Assignments	Due Date
Week 14 Dec 2-6	Public Presentations		
Week 15 Dec 9-11 Tuesday only - End of semester	Public Presentations evaluations		
Week 16 Dec 16-20 No exam End of semester Dec 19th	All late work completed and turned in for a grade.		

Final Exam

There is no final exam. There will be a final project

Attendance Policy

Although class attendance will not be counted as part of your course grade, you are expected to attend all classes each week having completed the assigned reading/activities. All of us in the class, you, me, your peers, have a responsibility to create an environment in which we can all learn from each other. I expect everyone to participate in class or virtual activities so that we can all benefit from the insights and experiences that each person brings. If extenuating circumstances arise that can make attendance difficult, please let me know. There will be a deduction in course points when you don't attend and participate in the class session as indicated above under Summary of Graded Assignments (-5 points/week). If circumstances make you miss classes during the semester, you may be overextended. I ask that you come see me to discuss your options.

Workload Expectation

(Policy: [Expected Student Academic Work per Credit](#))

Student workload expectations per undergraduate credit. For fall or spring semester, one credit represents, for the average University undergraduate student, three hours of academic work per week.

Evaluation of Student Performance

You will be evaluated on the basis of your performance on the assignments and projects, Your course grade will consist of the percentage of the total number of points earned.

Grading Standards

The final grade is recorded according to U of MN definition of grades:

93-100%	A	For exceptional work, well above the minimum criteria
90-92%	A-	For outstanding work, well above the minimum criteria
87-89%	B+	For excellent work, significant above the minimum criteria
83-86%	B	For work above the minimum criteria
80-82%	B-	
77-79%	C+	
73-76%	C	For work which meets the course requirements in every respect
70-72%	C-	
67-69%	D+	
63-66%	D	Worthy of credit even though it fails to meet the course requirements
0-63%	F	Failed to meet minimum course requirements

Shortly after the course, you may access your final grade online at <https://onestop.umn.edu/academics/transcripts-and-grades/transcripts>.

Make-up policy

In general, if you have extenuating circumstances (e.g. severe illness, family emergency) that affect your ability to complete any assignment on time, please contact the instructor ASAP.

Incomplete policy

If you are unable to complete the coursework due to extraordinary circumstances (e.g. hospitalization, family emergency), an incomplete ("I") may be arranged at the discretion of the instructor. Incompletes are only given with prior written agreement specifying the time and manner in which the student will complete the course requirements. Please contact the instructor in a timely manner if you are having any issues.

Extra credit policy

There may be 1-2 extra credit opportunities throughout the semester. Stay tuned to class announcements for more details.

How to Access Your Grades

Go to One Stop for Students (<https://onestop.umn.edu/academics/transcripts-and-grades/transcripts>) Grades & transcripts > Unofficial transcript.

Returning Papers, Exams, and Projects

All assignments for this class will be submitted electronically through Canvas and will be returned to you electronically through the same link where you turned in the assignment. If

you work in groups, only one group member needs to submit the assignment, but the graded assignment will be returned electronically to all individual group members.

Comments will be made through either MS Word comments feature or PDF annotations. If you are unable to see comments on your returned assignment, please contact the instructor promptly.

Student Conduct Code

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community. As a student at the University you are expected adhere to Board of Regents Policy: Student Conduct Code. To review the Student Conduct Code, please see:

http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Use of Personal Electronic Devices in the Classroom

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference: <http://policy.umn.edu/education/studentresp>.

Scholastic Dishonesty

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf) If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see: <http://policy.umn.edu/education/instructorresp>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: <http://www1.umn.edu/oscai/integrity/student/index.html>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

We will develop a policy for this class on the use of AI for research and assignments. The key to the proper use of AI is to verify and cite your sources, make sure you are representing your point of view and understanding of the topic that you used AI to begin a research project. We will experiment with this in class. You are expected to create your documents that represent you and not the compilation of what AI scours on the internet.

Makeup Work for Legitimate Absences:

You will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: <http://policy.umn.edu/education/makeupwork>.

Appropriate Student Use of Class Notes and Course Materials

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: <http://policy.umn.edu/education/studentresp>.

University Senate Grading Policy (required on all syllabi)

For additional information, please refer to <http://policy.umn.edu/education/gradingtranscripts>.

The University utilizes plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

A	4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements
A-	3.667
B+	3.333

- B 3.000 - Represents achievement that is significantly above the level necessary to meet course requirements
- B- 2.667
- C+ 2.333
- C 2.000 - Represents achievement that meets the course requirements in every respect
- C- 1.667
- D+ 1.333
- D 1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements
- S Represents achievement that is satisfactory, which is equivalent to a C- or better.
- F (or N) Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.
- I There will be a symbol I (incomplete) awarded to indicate that the work of the course has not been completed. The I will be assigned at the discretion of the instructor when, due to extraordinary circumstances (as determined by the instructor), the student who has successfully completed a substantial portion of the course's work with a passing grade was prevented from completing the work of the course on time. The assignment of an I requires a written agreement between the instructor and student specifying the time and manner in which the student will complete the course requirements. In no event may any such written agreement allow a period of longer than one year to complete the course requirements.

Sexual Harassment

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy:

<http://regents.umn.edu/sites/regents.umn.edu/files/policies/SexHarassment.pdf>

Equity, Diversity, Equal Opportunity, and Affirmative Action

The University provides equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or

gender expression. For more information, please consult Board of Regents Policy:
http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf.

Disability Accommodations

The University of Minnesota views disability as an important aspect of diversity, and is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

- If you have, or think you have, a disability in any area such as, mental health, attention, learning, chronic health, sensory, or physical, please contact the DRC office on your campus ([612.626.1333](tel:612.626.1333)) to arrange a confidential discussion regarding equitable access and reasonable accommodations.
- Students with short-term disabilities, such as a broken arm, can often work with instructors to minimize classroom barriers. In situations where additional assistance is needed, students should contact the DRC as noted above.
- If you are registered with the DRC and have a disability accommodation letter dated for this semester or this year, please contact your instructor early in the semester to review how the accommodations will be applied in the course.
- If you are registered with the DRC and have questions or concerns about your accommodations please contact your (access consultant/disability specialist).

Additional information is available on the DRC website: [Disability Resource Center](#) or e-mail drc@umn.edu with questions.

Mental Health and Stress Management:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website:
<http://www.mentalhealth.umn.edu>.

Academic Freedom and Responsibility

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom and conduct relevant research. Along with this freedom comes responsibility. You are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. You are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but you are responsible for learning the content of any course of study

for which you are enrolled.* When conducting research, pertinent institutional approvals must be obtained and the research must be consistent with University policies

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.

* Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".