

Inquiry Core: Scientific Inquiry

Submitting a course for inclusion in CSU’s Inquiry Core Curriculum is an opportunity to think creatively about how you can spark students’ curiosity and help them see the value of the knowledge and methods of your discipline.

Inquiry Core Curriculum Requirements

All courses in the CSU Inquiry Core Curriculum must be:

- Offered at the 100- or 200-level;
- Accessible and inviting to first-year non-major students;
- Adopt an Inquiry Orientation to design and delivery; and
- Include one or more Signature Assignments

Scientific Inquiry Requirements

All courses fulfilling the “Scientific Inquiry” requirement must:

- Meet OT-36 *Natural Sciences Learning Outcomes*
- Develop and assess the Core Competencies of *Critical Thinking & Quantitative Literacy*

Instructions for Completion

- Complete this document in Adobe Acrobat Reader. If you find that you cannot enter any additional text in a textbox, it is because you are using an incompatible PDF reader.
- Include the Core Curriculum Syllabus Statement in your syllabus
- Attach this completed document, your syllabus, and an overview of your signature assignment(s) in Curriculog.

[The CSU Core Curriculum Handbook](#)

Contact the Core Curriculum Director: corecurriculum@csuohio.edu

Course Code & Title	Associated Lab Code & Title (if applicable)

OT36 Outcome Mapping

For each OT36 learning outcome provided in the left column, indicate the following:

- (a) How the course embeds the outcome.
- (b) How student achievement of the outcome will be assessed.
- (c) Where in the syllabus, signature assignment overview, or other provided documentation the embedding and assessing of the outcome is evidenced.

OT36 Outcome	(a) Course Embed	(b) Assessment of Outcome	(c) Evidence of (a) and (b)
Understand the basic facts, principles, theories and methods of modern science.			
Explain how scientific principles are formulated, evaluated, and either modified or validated.			
Use current models and theories to describe, explain, or predict natural phenomena.			

OT36 Outcome	(a) Course Embed	(b) Assessment of Outcome	(c) Evidence of (a) and (b)
Apply scientific methods of inquiry appropriate to the discipline to gather data and draw evidence-based conclusions.			
Demonstrate an understanding that scientific data must be reproducible but that it shows intrinsic variation and can have limitations.			
Apply foundational knowledge and discipline-specific concepts to address issues or solve problems.			
Explain how scientific principles are used in understanding the modern world, and understand the impact of science on the contemporary world.			

OT36 Outcome	(a) Course Embed	(b) Assessment of Outcome	(c) Evidence of (a) and (b)
Gather, comprehend, apply and communicate credible information on scientific topics, evaluate evidence-based scientific arguments in a logical fashion, and distinguish between scientific and non-scientific evidence and explanations.			

Inquiry Orientation

Core Curricular courses are expected to take an inquiry orientation toward course design, organization, and instructional method. While complete “Inquiry Based Education” is not required, courses should include the following two components:

- Organize learning around the exploration and investigation of problems or questions that would be of interest to and engaging for first year students;
- Require students to engage, individually or collaboratively, in some of the stages of inquiry.

[Learn more about designing for inquiry](#)

Major Problems/Questions: What are the major problems and/or questions that frame your course?

Stages of Inquiry: How will students be engaged in the inquiry process in the course? What activities and/or assignments will be used to develop students’ ability to engage in inquiry?

Core Competency Mapping

The core competencies required are provided below. For each competency, do the following:

- (a) Indicate which two learning outcomes the course will especially focus on developing and assessing through one or more signature assignments. The available learning outcomes can be found on the [CSU Core Competencies](#) page of the [Core Curriculum Handbook](#).
- (b) Indicate how each identified learning outcome is embedded or understood in the course.

[CSU Core Competencies](#)

Core Competency 1: Critical Thinking	
Core Competency Learning Outcome	Associated Course Learning Outcome <i>and/or</i> description of how the outcome is embedded in the course
Core Competency 2: Quantitative Literacy	
Core Competency Learning Outcome	Associated Course Learning Outcome <i>and/or</i> description of how the outcome is embedded in the course

Signature Assignments

Each core curricular course is required to have at least one signature assignment and to assess all chosen core curriculum learning outcomes through signature assignments. All signature assignments include two parts: some form of authentic assessment (i.e., not an exam or quiz) and a personal reflection related to the assignment and/or course.

To complete this section, do the following:

- (a) Indicate the signature assignment(s) of the course, briefly describing it.
- (b) Indicate which core competency learning outcome(s) the signature assignment will assess and how it will do so.
- (c) Provide at least one of the reflection prompts you will provide students. You are welcome to provide students with options but need only provide one possibility here.

If you are using more than three signature assignments, include an additional attachment in Curriculog answering the same prompts as below for each additional signature assignment.

[Learn more about Signature Assignments](#)

Signature Assignment Name/Description	Core Competencies Assessed and how	Reflection Prompt

Inquiry Pathway

Core Curricular courses may be included in one or more established [Inquiry Pathways](#). Core courses are not required to be included in any pathway.

If you would like this course to be included in a pathway, answer the questions below.

Pathway:
How will the course meaningfully and substantively contribute to the pathway theme?
Pathway:
How will the course meaningfully and substantively contribute to the pathway theme?

PLANET EARTH: A USER'S GUIDE

UST 289 (3 Credit Hours)

In Person

UR 247

Fall 2025

Dr. Clayton Wukich (pronounced Woo-kitch)

Email: r.wukich@csuohio.edu

Zoom: <https://csuohio.zoom.us/j/6211238475>

Office Hours (UR 320): M/T 2:00 p.m. – 4:00 p.m.; and by appointment

Course Overview

This course is designed to explore the dynamic Earth systems and their impact on human societies and the natural environment through an inquiry-based approach. By examining climates, landscapes, water cycles, and ecosystems, students will actively engage in scientific inquiry to develop a comprehensive understanding of the physical processes that shape our world. Through hands-on projects, data analysis, and critical evaluation of environmental issues, students will learn to apply this knowledge towards sustainable living and policymaking. This course aligns with the university's Scientific Inquiry requirement and focuses on developing critical thinking and quantitative literacy.

Learning Objectives

1. Understand and explain the fundamental concepts and methods of physical geography.
2. Apply scientific methods to observe, analyze, and interpret geographic data related to Earth's systems.
3. Evaluate the impact of human activities on the Earth's environments and propose sustainable solutions.
4. Demonstrate quantitative literacy by analyzing and interpreting data related to physical geography.
5. Employ information literacy skills to research, evaluate, and communicate geographic information.
6. Understand and articulate the role of scientific knowledge in addressing global challenges such as climate change, disaster risk, and biodiversity loss.

We will achieve our objectives through a number of teaching and learning activities, including readings, case study analysis, documentary films, and short lectures. Regular assignments will demonstrate student knowledge and help you advance your knowledge.

Readings

No books are required. Weekly readings will be posted on Blackboard.

Professor's Office Hours

Don't hesitate to contact me. My email is r.wukich@csuohio.edu. My office hours are:

M/T 2:00 p.m. – 4:00 p.m.; and by appointment

We can meet in UR 320 or via <https://csuohio.zoom.us/j/6211238475>.

Blackboard

Blackboard provides the dashboard through which we conduct this course

Should you need technical support, please call (216) 687-5050 or use the following link:

<https://www.csuohio.edu/center-for-elearning/technical-support>

Grading Policy

This course will be graded on a 100 point scale as follows:

GRADING SCALE			
A	94-100	C+	77-79
A-	90-93	C	70-76
B+	87-89	D	69-60
B	83-86	F	< 60
B-	80-82		

Graded evaluations include:

GRADED ACTIVITIES	%
Quizzes	45
Participation and Discussion	20
Our Changing World Project	20
Map and Data Analysis Assignments	15

Quizzes (45 points)

Quizzes will be given throughout the semester via Blackboard. They will include a combination of short answer, multiple choice, and true/false questions. Questions will derive from our course material (e.g., readings, lectures, and other activities) and will serve as a knowledge check. Consider it an “open notes” assignment; however, students are expected to work independently. Instructions will be posted on Blackboard.

Participation and Discussion (20 points)

Class participation is a vital component of the learning experience in this course. This category emphasizes the importance of active involvement in class discussions and activities. Participation is measured by students’ preparedness, contribution to discussions, engagement with peers, and involvement in interactive class elements.

Our Changing World Project (20 points)

Students will investigate an environmental challenge affecting a location they care about, using research to understand the problem’s causes and impacts. They’ll present their findings through a poster or slideshow, accompanied by a short report. This semester-long project encourages students to think like scientists and problem-solvers, fostering a deeper connection to Earth’s environmental challenges and their role in addressing them.

Map and Data Analysis Assignments (15%)

Through these assignments, students will learn to interpret maps and datasets, applying quantitative reasoning to uncover insights about the Earth’s physical geography. This hands-on experience will sharpen their analytical skills and deepen their comprehension of how landscapes and environmental processes interact.

Schedule

Our course schedule is outlined below. Readings, other learning activities, and assignment descriptions can be found on Blackboard.

Week 1 Introduction to Physical Geography

Overview of Earth's systems and the significance of physical geography.

Week 2 The Atmosphere

Understanding weather, climate systems, and climate change.

Week 3 Hydrosphere

Exploration of the water cycle, water resources, and their management.

Week 4 The Lithosphere

Geomorphology, soil types, and landforms.

Week 5 Ecosystems and Biodiversity

Examining global biodiversity, its importance, and conservation efforts.

Week 6 Human Impact on the Environment

Analyzing human-environment interactions.

Week 7 Sustainable Land-Use Planning

Principles and practices for sustainable development and urban planning.

Week 8 Agriculture and Food Security

The role of physical geography in sustainable agriculture.

Week 9 Water Resources Management

Strategies for sustainable water use and conservation.

Week 10 Energy Resources

Renewable energy sources and the geography of energy.

- Week 11 Disaster Risk Reduction**
- Natural disasters, their management, and mitigation strategies.
Case studies on disaster resilience and recovery.
- Week 12 Climate Change and Society**
- Societal impacts of climate change and mitigation efforts.
- Week 13 Urban Environments**
- Challenges and solutions for sustainable urban living.
- Week 14 Technology in Physical Geography**
- GIS, remote sensing, and other technologies for geographic analysis.
- Week 15 Conservation Efforts Globally**
- Case studies on successful conservation strategies.
- Week 16 Synthesis and Future Direction**
- Preparing for a more sustainable future.

The university academic calendar can be found at:
<https://www.csuohio.edu/registrar/academic-calendar>

Core Curriculum Syllabus Statement

This course is part of Cleveland State University's Inquiry Core Curriculum program. The Inquiry Core Curriculum program aims to provide students with a well-rounded education, emphasizing a diverse range of methods of inquiry and essential skills for success after graduation. This course contributes to the program by fulfilling the **Scientific Inquiry** requirement. In fulfilling that requirement, this course will provide you opportunity to develop the following core competencies: **critical thinking** and **quantitative literacy**.

Other Course Policies

Class Conduct

Students (and the professor) will conduct themselves honorably throughout the course. We will treat each other with respect and create an atmosphere in which open discussion and debate can take place (when applicable in our asynchronous format).

Eight values will guide classroom behavior. We will discuss and apply them throughout the course.

- Be honest
- Respect each other
- Excite your intellectual curiosity
- Engage in conversation and debate (when applicable)
- Support your positions with evidence and logic
- Demonstrate professionalism
- Communicate problems sooner rather than later
- Provide and receive timely, applicable, and candid feedback

Academic Integrity Statement

Academic honesty is essential to maintain the integrity of the university and to foster an environment conducive to the pursuit of knowledge. All students are expected to adhere to the standards of academic honesty. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty, will be subject to disciplinary action.

Plagiarism is stealing and/or using the ideas or writings of another in a paper or report and claiming them as one's own. This includes but is not limited to the use, by paraphrase or direct quotation, of the work of another person without full and clear acknowledgement.

Submitting any text generated by artificial intelligence (e.g., chatbots) without using quotation marks and explicitly referencing the application as a reference (e.g., ChatGPT) is plagiarism.

Self-plagiarism is also a form of plagiarism. This includes using part of a paper written for one class and submitting it as original work for another class.

Any student suspected of violating this obligation of academic integrity for any reason during the semester will be required to participate in the procedural process initiated at the professor level.

CSU's academic misconduct policy and procedures are posted on CSU's academic integrity website: <https://www.csuohio.edu/academic-integrity>.

Attendance/Participation

Achieving our course objectives requires your regular participation to complete the assignments.

Late Assignments

Assignments must be turned in by the due date unless prior arrangements are made with the professor.

Additional Policies and University Resources

Student Disability Services

Educational access is the provision of classroom accommodations, auxiliary aids and services to ensure equal educational opportunities for all students regardless of their disability. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Disability Services at (216) 687-2015. The Office is located in Rhodes West 210. Accommodations need to be requested in advance and will not be granted retroactively.

Students should notify the instructor as soon as possible if they have been granted an accommodation through the Office of Disability Services.

In cases of attendance accommodation, it is the student's responsibility to work with the instructor to determine how best to compensate for any missed classes/course work (e.g., assignments in lieu of attendance and make-up exams). The instructor will place limits on the amount of time which assignments can be completed.

Office for Institutional Equity

Federal law, including Title IX, and University policy require that CSU address discrimination, harassment and sexual violence and enable students affected by these issues to have the same opportunity to succeed as other students. To do this, the CSU Office for Institutional Equity (OIE) provides information, identifies resources (e.g., counseling, medical, advocacy, and safety planning), issues academic accommodations (e.g., excused absences, extended deadlines, late withdrawals, and alternative assignments), and other accommodations (e.g. No Contact Directives and changing living arrangements).

Any student affected by discrimination, harassment and/or sexual violence and seeking assistance, should contact the Office for Institutional Equity by calling (216) 687-2223, sending an email to OIE@csuohio.edu, or visiting AC 236.

CSU Writing Center

The Writing Center serves the students, staff, and faculty of CSU. Their goal is to help people become better writers and develop more confidence in their writing abilities. Writing Center tutors provide one-on-one and small group writing instruction. Go to <http://www.csuohio.edu/writing-center/writing-center> for more information or call (216) 687-6982 for an appointment.

CSU Library

CSU librarians provide student support regarding research material access. The librarian assigned to work with students in our college is Diane Kolosionek. Her email address is d.kolosionek44@csuohio.edu and her phone number is (216) 802-3358.

The Counseling Center

Resources are available for students who are coping with stress, anxiety, isolation, or feeling helpless, which may be fueled by the pandemic and other challenges.

Sometimes you might feel the need to talk to someone who can help you better understand decisions you face or those you have made. The on-campus Counseling Center provides you with a welcoming, confidential place to discuss your challenges and concerns with a professional counselor.

CSU's Counseling Center is open online and by phone this semester, offering crisis counseling, as well as coping skills groups, individual and group therapy, psychiatric services, and case management.

The Counseling Center's regular office hours are Monday through Friday, 9am–5pm, with crisis call-in from 1–3pm, and after-hours phone counseling available 24/7.

To get connected, just call (216) 687-2277 or go to <http://www.csuohio.edu/counselingcenter/counselingcenter>.

Lift Up Vikes

Some students might need additional basic resources. The CSU community can help.

Lift Up Vikes is a student resource on campus that offers “a convenient, dignified and compassionate process through which CSU students are connected to resources that supplement nutrition and other basic human needs as they strive to earn a college degree.” They offer a food pantry, emergency grants, and other resources.

Call (216) 687-5105, email liftupvikes@csuohio.edu, or visit <https://www.csuohio.edu/liftupvikes/liftupvikes>.

**The instructor reserves the right to revise the syllabus.*

Signature Assignment

Our Changing World Project (20 points)

In this assignment, you will take on the role of an environmental analyst. Choose a specific place that holds significance for you—this could be your hometown, a favorite vacation destination, or a spot you dream of visiting. Your mission is to explore a significant environmental challenge this place faces, such as climate change impacts, water scarcity, urban expansion, or threats to local wildlife.

This project will take us through the whole semester. We'll do it step by step, so don't worry if it seems like a lot right now. You'll have plenty of help along the way, and by the end, you'll know a lot more about our planet and how we can all help make it a better place!

Steps to Follow

1. **Choose a Location**
 - Select a place that means something to you. It can be anywhere in the world.
2. **Identify a Problem**
 - Determine what's going wrong in that location. Is it super hot, super cold, or maybe there's no water? Perhaps too many buildings are popping up?
3. **Research the Problem**
 - Use internet resources, books, and/or articles to find out why this problem is happening. Look at quantitative data (like temperature or precipitation statistics) and qualitative stories from people living there.
4. **Analyze and Evaluate Information**
 - Critically analyze the information gathered to develop a comprehensive understanding of the problem. Evaluate the assumptions and relevance of contexts when presenting your analysis.
5. **Propose a Solution**
 - Think of a solution to help fix this problem. It doesn't have to be something big; small steps count too! Ensure your solution is informed by a logical interpretation of the data.

What You'll Make

- **A Poster**
 - Show off what you found with pictures, maps, and facts. Make it fun and colorful! Ensure your poster explains information in various mathematical forms, such as graphs, tables, and words.
- **A Short Essay**
 - Write a short essay about your place and the problem. Include why it's happening, who or what it's affecting, and your ideas for solutions. Your essay should state a specific position that is thoughtful, recognizes complexities, and acknowledges limitations. Additionally, state conclusions and related outcomes logically and in a priority order.

What You'll Learn

- How to critically state, describe, and consider an issue or problem.
- How to use information from sources with interpretation and evaluation to develop a comprehensive analysis or synthesis.
- How to systematically and methodically analyze assumptions and carefully evaluate the relevance of contexts when presenting a position.
- How to explain information presented in mathematical forms, such as equations, graphics, diagrams, tables, and words.
- How to make judgments and draw appropriate conclusions based on the quantitative analysis of data while recognizing the limits of this analysis.

Reflection Question - After you're done, think and write about this:

- How did working on this project change the way you see the world and your role in it? Do you think differently about how we should take care of our planet?
- What was the most surprising piece of information you discovered during your research, and why did it surprise you?
- How did the quantitative data you reviewed influence your understanding of the environmental challenge and the solutions you proposed?

Grading Rubric

Criteria	Exemplary (4 points)	Proficient (3 points)	Developing (2 points)	Beginning (1 point)
Problem Identification	Clearly states, describes, and considers an issue or problem.	States and describes an issue or problem with minor lapses.	Incompletely states or describes an issue or problem.	Fails to state or describe an issue or problem.
Research & Analysis	Uses information from sources with thorough interpretation and evaluation to develop a comprehensive analysis.	Uses information from sources with adequate interpretation and evaluation to develop a comprehensive analysis.	Uses information from sources with some interpretation and evaluation to develop an incomplete analysis.	Uses information from sources with minimal interpretation and evaluation, resulting in a flawed analysis.
Review of Quantitative Analysis	Explains information presented in various mathematical forms; makes judgments and draws appropriate conclusions.	Explains information presented in various mathematical forms; draws adequate conclusions.	Explains information presented in some mathematical forms; draws incomplete conclusions.	Explains information presented in few mathematical forms; draws inadequate or no conclusions.
Proposed Solution	States a specific position that is thoughtful, recognizes complexities, and acknowledges limitations.	States a specific position that recognizes some complexities and acknowledges some limitations.	States a position with limited recognition of complexities and acknowledgment of limitations.	States a position with little to no recognition of complexities or acknowledgment of limitations.
Conclusion & Reflection	States conclusions and related outcomes logically and in a priority order; reflection demonstrates critical insight.	States conclusions and related outcomes logically; reflection demonstrates some insight.	States conclusions and related outcomes with minor lapses in logic; reflection demonstrates limited insight.	States conclusions and related outcomes with major lapses in logic; reflection demonstrates minimal insight.