Hello and welcome!

I’m Dr. Xavier Haro-Carrión (he / him; you can call me Xavier if you wish), your course instructor, who is eager to help you understand some fundamental knowledge of Physical Geography!

Email me at xharocar@macalester.edu
Visit me in CARN 104F

Your TA will be Elizabeth Trevathan. Email her at etrevath@macalester.edu.

Course learning outcomes

- Locate and analyze Earth’s major geophysical features and processes.
- Relate Earth’s geophysical configuration with Earth’s surface processes, such as seasons and climate.
- Analyze how geophysical features and processes affect life on Earth.
- Explore interactions between Earth’s systems and the human realm.
- Examine how (tools and lines of thought) geographers study these processes.

Course Description

This course introduces the student to an area of study that brings together and interrelates patterns and processes that drive Earth’s physical environments, including human interactions with the physical environment. Among other topics, we will learn about the principles and mechanisms of climate and weather, water resources, landforms, earth surface processes, landscapes, vegetation, and ecosystems at global and regional scales. We will also learn how the spatial and temporal patterns of these processes are interpreted and understood using maps produced from Geographic Information Systems (GIS), Global Position System (GPS) and satellite imagery. Using selected studies we will also examine the social forces that shape many of these systems to gain a broader understanding of the socio-environmental interconnections of these physical environments.
Meeting times and office hours

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Textbooks

This class has no required textbooks. The following books are valuable sources of information for the topics that will be covered (all available in my office). Copies of chapters will be provided for a limited time. Additional sources, such as peer-reviewed papers, news articles, podcasts, are outlined in the “Detailed Weekly Schedule” section of this syllabus and will be accessible in Moodle.


Course details

Structure

Throughout the semester, I will employ diverse teaching approaches. Some classes will adopt a "flipped-classroom model," requiring students to engage with the material before class, allowing for more in-depth exploration during our sessions. In certain instances, a "blended-learning model" will be utilized, combining pre-provided material with in-class lectures. Traditional lecture-style delivery will be employed in many classes, while others will focus entirely on discussion. As the semester progresses, I encourage you to provide feedback on the teaching techniques you find most beneficial and engaging!
Class Activities
Nearly every class will feature a related activity, such as exit tickets, opening questions, summaries of previous class, paper discussions, and more. These activities have multiple functions: they ensure consistent review of class content, promote class engagement, foster a sense of community, and maintain the cohesion and commitment of our group. As these activities will be conducted almost daily, they will also contribute to tracking attendance. Generally, these activities are not subjected to make-up opportunities (but refer to Attendance policies below for exceptions). I acknowledge that unavoidable circumstances may occasionally hinder your attendance and full participation. To accommodate such situations, the lowest grades of class activities will be disregarded and will not factor into the final calculation of your Class Activities grade.

Class Discussions and Google Earth Exercises
We will have about ten class discussions or Google Earth labs during the semesters. Discussions differentiate from activities in that they are typically longer, involving the entire class time and a deeper analysis of the assigned readings. These discussions are intended to be deeper and longer discussions about the application of physical geography to societal (broadly defined) issues. We will use various class discussion approaches including philosophical chairs, pinwheel discussions, Socratic seminars, etc. You might be asked to prepare something (e.g., a questionnaire) before class and then use that material in class. Details will be provided during the semester before each discussion. It will be difficult to make-up class discussions, so I encourage you to plan in advance if you need to be absent any of these days.
We will also have some longer activities or labs involving the use of Google Earth. Students will be asked to bring their computers and have Google Earth installed. The software needs 200 MB of free hard-disk space and a RAM of at least 128 MB (very likely your computer will fulfill these requirements).

Exams
Two cumulative exams will be part of this course. One will be scheduled approximately midway through the semester, and the other will take place toward the end of the semester. These exams will encompass short-answer questions, brief essays, map interpretations and applied problem-solving questions. The midterm exam will cover all topics studied until that point in the semester and the final will cover 65% of topics covered in the last half of the semester and 35% of topics covered in the first half of the semester.
The purpose is to evaluate your knowledge and develop soft skills, such as the ability to work under time-limited and potentially stressful scenarios. People respond differently to these circumstances, and I am open to considering options to make the exam-taking experience as comfortable as possible, including scheduling exams outside of class in the Max Center or adjusting proposed exam dates to better accommodate other academic commitments.
Podcast
In this class, a significant portion of your final grade hinges on the creation of an individual podcast. Each student will choose a broad topic related to the class subjects, then narrow it down to a specific case study—such as a particular earthquake, hurricane, tornado, biosphere reserve, drought in a specific region, erosion processes in a particular landscape, or the impact of invasive species in an area. The objective is for every student to delve deeper into a specific case study within the broader themes explored in class. We will all listen and discuss your podcast to gain a more profound understanding of the topics analyzed during the entire semester.

We will work during the course of the semester to define your topic and work on this assignment and we will be supported by the Digital Resource Center (DRC) at Macalester. Here are some sources you will likely use during the entire semester that you should start exploring as soon as you can. How to Listen to a Podcast for Class provides some good tips on how to approach podcasts as a source of information in class. We’ll have at least one podcast as bibliographic material, so be prepared!

Mac Digital is the general webpage of the Digital Liberal Arts (DLA) at Macalester, and Podcasting talks specifically about podcasts and lists all the resources that you’ll have available at Macalester to do your podcast.

We will also do a short exercise to help prepare you to do your podcast. While probably time consuming, my intention is for this activity to be a fun learning experience.

Course policies and support

Resources
All course materials, including lecture slides, readings and book chapters, will be accessible on Moodle. We will utilize Module for submitting assignments that fall outside our regular class schedule, as well as for grade tracking purposes.

Artificial Intelligence (AI)
In this course, the use of Artificial Intelligence (AI) is permitted with certain guidelines. AI can be employed as a starting point for research and to simplify complex ideas, but it must be used cautiously. It is acceptable for checking grammar and proofreading, as long as the content reflects the student's own ideas and effort. AI can aid in understanding intricate readings and serve as a translation tool to facilitate comprehension and communication in English. However, students are prohibited from using AI to generate entire papers or assignments, and any information sourced from AI should be validated from reputable sources.

Attendance
You’re warmly invited and encouraged to attend all classes, as attendance is key to our learning journey. Your participation in in-class activities is essential, and these are generally unalterable. Yet, exceptions for academic/sports commitments, illness, or special circumstances can be considered. If religious observances create conflicts, kindly reach out
within the first two weeks of class for possible solutions. Your engagement enriches our shared experience!

**Late Assignments**
Late assignments will be accepted, but there will be a 10% reduction in the final grade for each 24-hour period they are overdue. If you encounter any difficulties that might necessitate adjustments to this policy, please feel free to discuss them with me.

**Office Hours**
I will maintain regular office hours to delve into any questions, issues or concerns about the course or your experience as first-year students. If your schedule clashes with the posted office hours, we can coordinate an alternative meeting time. Beyond the designated office hours, feel free to contact me via email. I strive to respond promptly, mostly during work hours (8:00 am to 4:00 pm on weekdays).

**Diversity**
I recognize that the scientific content in this course has historically been shaped by a limited subset of privileged perspectives, potentially leading to both overt and covert biases. To achieve a more comprehensive understanding of science, I am committed to actively diversifying the range of voices and experiences integrated into the curriculum. Beyond course materials, I am dedicated to cultivating an inclusive learning environment that respects your unique identities, encompassing factors like race, gender, class, nationality, and religion. Your feedback is essential in this endeavor. Please don't hesitate to share suggestions for enriching course materials, promoting diversity, and enhancing inclusivity, either through direct communication or anonymous feedback.

**Disabilities**
I am dedicated to providing all students, including those with disabilities, equal access to course content. If you are facing obstacles that we can address, please let me know. I'm eager to collaborate with you to ensure your success in the course. For students with documented disabilities, reasonable accommodations are available. To discuss your individual needs, please reach out to the Disability Services office via email at disabilityservices@macalester.edu or by calling 651-696-6874 to schedule an appointment to discuss your individual needs.

**Well-Being**
At Macalester, valuing your well-being is paramount. By dedicating time to self-care, you'll enrich your academic experience. Remember, you're more than a student – you carry your own experiences, emotions, and identities. Acknowledge any stressors you face, whether mental, emotional, physical, or financial, and understand their potential academic impact. Recognize your body's needs. During class, stay hydrated, take breaks as needed, and prioritize emotional well-being. Beyond class, prioritize sleep, movement, and connections with peers to foster resilience at Macalester. If well-being challenges arise, feel free to contact me or explore support resources [here](#).
**Academic Support**
You can access personalized tutoring, academic support, and study skills assistance through [Macalester Academic Excellence (MAX)](https://www.macalester.edu/max). These resources are designed to aid you, and I strongly urge you to utilize them.

**Academic Integrity**
Students are required to independently complete and submit their own work, adhering to established academic conventions for appropriately using and citing external materials and ideas. Participating in cheating or plagiarism will lead to a failing grade for the course. Further details about Macalester’s academic integrity can be accessed [here](https://www.macalester.edu/max). I recommend thoroughly reviewing this information.

**Public Health**
If you do not feel well, please do not come to class. When we're on campus for class, we will be following the [Mac Stays Safer Community Commitment](https://www.macalester.edu/mac-stays-safer).

**Title IX**
Macalester prioritizes a secure and inclusive environment for all. Those experiencing sexual harassment, violence, or stalking are encouraged to seek help. As faculty, I must report such disclosures to the Title IX Office to ensure support. Rest assured, your privacy is respected, and the report is confidential. You can contact Macalester’s Title IX Coordinator directly at titleixcordinator@macalester.edu.

### GRADING

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<td>Class Activities</td>
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<tr>
<td>Discussions and Google Earth labs</td>
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<td>Podcast</td>
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<td>A-</td>
<td>90.0% to &lt; 93.0 %</td>
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<td>B+</td>
<td>87.0% to &lt; 90.0 %</td>
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<td>B</td>
<td>83.0% to &lt; 87.0 %</td>
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DETAILED WEEKLY SCHEDULE

Disclaimer: This schedule represents my current plan and objectives. Details about pre-class assignments, readings and specific dates might be added / adjusted as we progress in the semester with the goal of enhancing your learning experience.

Week 1: Welcome
January 19

Learning outcome. This week, we’ll outline the scope of the course.

- **Friday.** Come to class having read the following:
  
  Haro-Carrió, X. 2024. Neotropical Landscapes Syllabus Spring 2024

Week 2: What’s Physical Geography and Critical Physical Geography?
January 22, 24 and 25

Learning outcome. This week, we’ll Learn what the fields of Physical Geography and Critical Physical Geography study and Introduce Google Earth.

- **Monday.** Come to class having read the following:
  
  
  Reynolds et al. (2021). Chapter One Topics 1.1 to 1.2.

- **Wednesday.** Lecture: The Nature of Physical Geography. Come to class having read the following:
  
  

- **Friday.** Google Earth lab: Introduction to Google Earth. Bring your computer for a Google Earth exercise.

Week 3: Atmosphere – Solar Energy and Balance
January 29, 31 and February 2

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<tr>
<th>Grade</th>
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<td>D+</td>
<td>67.0% to &lt; 70.0%</td>
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### Learning outcome

This week our goal is to understand how solar energy drives virtually all major global processes.

- **Monday.** Lecture: Energy and Matter in the Atmosphere. Come to class having read the following:
  

- **Wednesday.** Lecture: Energy and Matter in the Atmosphere Part II.

- **Friday.** Class Discussion. Come to class having read the following:
  

### Week 4: Atmosphere – Atmospheric motion and moisture

February 5, 7, and 9

**Learning outcome.** This week we will examine how global processes change as a function of Earth’s atmosphere motion and analyze how water in the atmosphere control weather and climate.

- **Monday.** Exercise: The Coriolis Effect. Come to class having read the following:
  
  Reynolds et al. (2021). Chapter Three: Atmospheric Motion

- **Wednesday.** Lecture: Atmospheric Motion and Moisture. Come to class having read the following:
  

- **Friday.** Critical Physical Geography Class Discussion. Come to class having read the following:
  


### Week 5: Atmosphere – Atmosphere and Hydrosphere – Weather and Climate

February 12, 14, and 16

**Learning outcome.** This week we will study the interactions between the ocean and the atmosphere and learn about climate around the world.

- **Monday.** Lecture: Atmosphere-Ocean-Cryosphere & Climates around the World. Come to class having read the following:
  

- **Wednesday.** Class discussion: ENSO and the Thermohaline Circulation. Come to class having read the following:


- **Friday.** Google Earth exercise: The Northwest Passage. Bring your computer for a Google Earth exercise.

### Week 6: Hydrosphere – Water resources
February 19, 21, and 23

**Learning outcome.** Analyze how surface and groundwater interact and how it impacts people.

- **Monday.** Lecture: Water Resources. Come to class having read the following:


- **Wednesday.** Class discussion: Water Resources in the US. Come to class having read or listened to the following:

  All class:


  Groups will be made for the following:


**Week 7: Hydrosphere – Water resources**

February 26, 28, and March 1

**Learning outcome.** Analyze how surface and groundwater interact and how it impacts people.

- **Monday:** Class discussion: Water Resources outside the US. Come to class having read the following:
  

- **Wednesday.** Invited speaker Bill Moseley.

- **Friday.** Class Discussion. Come to class having read the following:
  
  “How Climate Change Alters the Water Cycle.” *Nature Water* 1, no. 6 (June 21, 2023): 485–485. [https://doi.org/10.1038/s44221-023-00104-6](https://doi.org/10.1038/s44221-023-00104-6).

**Week 8: Exam I and mid-course evaluations**

March 4, 6 and 8

**Learning outcome.** We will test our knowledge of the topics studied in class until this point.

- **Monday.** Review for Exam I or invited speaker and Critical Physical Geography Class Discussion. Come to class having read the following:
  

- **Wednesday.** Exam I

- **Friday.** MCI

**Week 9: Spring Break**

March 11, 13 and 15

**Learning outcome:** Appreciate the importance of taking a break, enjoying doing things outside of academic commitments and taking care of yourself. Enjoy the break!

**Week 10: Lithosphere**

March 18, 20, and 22
Learning outcome. Introduce basic concepts of geomorphology - theory of plate tectonics, processes related to the breakdown of surface material, and the production of soils.

- **Monday.** Lecture: Plate tectonics and the surface of Earth. Come to class having read the following:
  
  Reynolds et al. (2021). Chapter Nine: Understanding Landscapes
  
  Reynolds et al. (2021). Chapter Ten: Plate Tectonics

- **Wednesday.** Lecture: Soils. Come to class having read the following:
  

- **Friday.** Google Earth exercise: investigating Plate Tectonics. Bring your computer for a Google Earth exercise.

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**Week 11: Biosphere - Biogeography**
March 25, 27, and 29

Learning outcome. Understand key aspects that define the Biosphere and the geographic distribution of life on the planet.

- **Monday.** Lecture: Foundations of Biogeography. Come to class having read the following:
  
  

- **Wednesday.** Lecture: Biomes and Ecosystems. Come to class having read the following:
  
  

- **Friday.** Lecture: Island Biogeography. Come to class having read the following:
  

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**Week 12: Biosphere – Biogeography**
April 1, 3 and 5

Learning outcome. Grasp some basic concepts of island biogeography and a

- **Monday.** Biogeography activity: Exploring Island Biogeography through Data.

- **Wednesday.** Lecture: The Biodiversity Crisis and Conservation Biogeography. Come to class having read the following:

- **Friday.** Invited speaker: Eric Carter – Environmental Hazards

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<tr>
<th>Week 13: Review</th>
<th>April 8, 10 and 12</th>
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<td><strong>Learning outcome.</strong></td>
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<td>- <strong>Monday.</strong> Course content review ahead of the final and field exercise</td>
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<tr>
<td>- <strong>Wednesday.</strong> Field exercise – Ordway Station</td>
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<td>- <strong>Friday.</strong> Exam II</td>
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<th>Week 14: Podcast preparation</th>
<th>April 15, 17 and 19</th>
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<td><strong>Learning outcome.</strong> We will dedicate all this week to prepare our podcasts</td>
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<td>- <strong>Monday.</strong> DRC</td>
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<td>- <strong>Wednesday.</strong> Podcast work</td>
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<td>- <strong>Friday.</strong> Podcast work</td>
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<th>Week 15: Podcast Presentation and Discussion</th>
<th>April 22, 24 and 26</th>
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<td><strong>Learning outcome.</strong> This week we will deepen our understanding of Physical Geography by listening to each other’s podcasts and discussing them in class.</td>
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<tr>
<td>- <strong>Monday.</strong> Podcast presentations and discussion</td>
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<td>- <strong>Wednesday.</strong> Podcast presentations and discussion</td>
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<tr>
<td>- <strong>Friday.</strong> Podcast presentations and discussion</td>
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<th>Week 16: Course Evaluations</th>
<th>April 29</th>
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<tbody>
<tr>
<td>- <strong>Monday:</strong> Course Evaluations</td>
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