Fall 2024 Dr. Lauren Stachowiak

GEOS 113 Office: 126H SCI

The Earth’s Climate and Weather [lstachowiak@ewu.edu](mailto:lstachowiak@ewu.edu)

M-F 11:00am-11:50am SCI 113 Office Hours: by appt.

**Course Quick Facts**

1. The textbook is optional but recommended. Use “*Elemental Geosystems* by Birkeland 8th Ed” to search for used copies of the book via online retailers to get the best price. This textbook is NOT available as a Canvas textbook.
2. A total of 10 quizzes and lab activities constitute the graded materials for this course. No final exam!
3. Lecture meets MWF, Labs meet T/R – you will signup for your lab group on the first day of class.
4. Email me at [lstachowiak@ewu.edu](mailto:lstachowiak@ewu.edu) to ask questions or set up an appt via zoom or in-person.

**Course Materials**

The textbook for the class is *Elemental Geosystems* by Birkeland (8th Ed or later) and while optional is recommended if you tend to struggle with grasping concepts from lectures and slides alone. You do not need to purchase any lab manuals or study aids for this course, I write and provide all the lab materials you will need for the term.

**Course Description and Learning Objectives**

Geoscience 113 is an introduction to physical geography and the principal components of Earth’s natural systems of weather, climate, natural vegetation, and their interrelationships. Topics to be covered in this course include: (1) the fundamentals of weather (*e.g.* temperature, humidity) and weather processes (*e.g.* thunderstorms, tornadoes), (2) major climate classifications, and (3) biomes and the biosphere. All topics in the course will be contextualized by anthropogenic climate change and how it impacts all spheres on Earth.

Upon successful completion of this course, students will be able to:

* Use geographic skills to understand weather, climate, and vegetation on Earth.
* Identify linkages between our climate system, world vegetation and ecological patterns, and society.

**Course Grades**

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| --- | --- | --- |
| **Grade** | **Percent Range** | **Grade Point** |
| A | 90.0 and above | 4.0 |
| B | 80.0 – 89.9 | 3.0 |
| C | 70.0 – 79.9 | 2.0 |
| D | 50.0 – 69.9 | 1.0 |
| F | 49.9 and below | 0.0 |

|  |  |
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| **Item** | **Point Value** |
| Labs (10 @ 20 pts each) | 200 |
| Quizzes (10 @ 20 pts each) | 200 |
| **TOTAL POINTS POSSIBLE** | 400 |

**Attendance Policy**

Attendance is expected for lectures and labs for this course. You should expect to put in approximately 2 hours of outside work for every credit hour in this course. You will not do well in this course if you fall too far behind or do not submit materials in a timely manner.

**Academic Integrity**

Academic Integrity is the cornerstone of the university. Any student who attempts to gain an unfair advantage over other students by violating the Academic Integrity policy may be reported to the university and may receive a sanction up to and including XF for the course, suspension, or expulsion from the university. This policy is on the EWU web site.[https://inside.ewu.edu/policies/knowledge-base/wac-172-90-student-academic-integrity-3/](https://inside.ewu.edu/policies/policies-and-procedures/wac-172-90-student-academic-integrity-3/)

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**Affirmative Action Statement**

Eastern Washington University adheres to affirmative action policies to increase the number and retention of students and employees from historically underrepresented groups.

**ADA Statement**

Eastern Washington University is committed to providing support for students with disabilities. If you are a student with physical, learning, emotional, or psychological disabilities needing an accommodation, you are encouraged to stop by Disability Support Services (DSS), TAW 124 or call 509-359-6871.

**Holidays & Religious Accommodations**

Please refer to the following link for specifics on the holiday and religious accommodations per EWU policy 403-1: <https://inside.ewu.edu/policies/knowledge-base/ewu-403-01-holidays/>

**TERM SCHEDULE**

**Week 1**

*Lecture Topics:* essentials of geosystems, longitude and latitude, GIS

*Readings*

* Acquire textbook if you plan to do so
* Read Chp. 1 in the textbook (Essentials of Geosystems)

**Week 2**

*Lecture Topics:* Earth-Sun geometry, layers of the atmosphere, seasonality

*Readings*

* Read Chp 2 in the textbook (Solar Energy, Seasons, and the Atmosphere)

**Week 3**

*Lecture Topics:* Energy balances, principal controls on temperature, Earth’s temperature patterns

*Readings*

* Read Chp 3 in textbook (Atmospheric Energy and Global Temperatures)

**Week 4**

*Lecture:* Atmospheric pressure and wind, driving forces of wind, ocean currents

*Readings*

* Read Chp 4 in textbook (Atmospheric and Oceanic Circulations)
* Read the US State of the Climate report for August 2024 (should be released mid-Sept 2024, link will be shared my your instructor when the webpage is available)

**Week 5**

*Lecture:* Unique properties of water, humidity, atmospheric stability, basics of clouds/fog

*Readings*

* Read Chp 5, Pt I (Atmospheric Water and Weather, Pgs. 142-157)

**Week 6**

*Lecture:* Air masses, atmospheric lifting mechanisms, violent weather

*Readings*

* Read Chp 5, Pt II (Atmospheric Water and Weather, Pgs. 158-175)

**Week 7**

*Lecture:* Earth’s Climate Regions and Biomes (topics cover basics of biogeography and climate regions)

*Readings*

* Read Chps 7/17 in textbook (mix of Earth’s Climatic Regions, and Terrestrial Biomes)

**Week 8**

*Lecture:* Ecosystem essentials, communities and distribution, disturbance and succession, stability/resilience

*Readngs*

* Read Chp 16 in textbook (Ecosystem Essentials)
* Lytton, BC heat wave and wildfire June 2021 -- <https://www.theguardian.com/world/2021/jul/25/lytton-canada-heat-wildfire-record-temperatures>

**Week 9**

*Lecture:* No lecture this week! We will be watching environmental films/documentaries.

*Readings*

* Watch out for the email and announcements from your instructor during this week for which movies to watch and where to find them for free online.

**Week 10**

*Lecture:* mechanisms of natural climate fluctuations, paleoclimate reconstructions, Earth’s future environment

*Readings*

* The IPCC AR(6) WGI Summary For Policy Makers (link below for direct download, also available as a PDF on Canvas). Note: as of Summer 2024, the AR(6) is the latest IPCC report available and represents the latest state of the science and dialogue related to climate change.
* <https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf>