

**EARTH SYSTEM
SCIENCE
GEOGRAPHY**

104

Tuesdays and Thursdays 10:25-11:40 a.m.; Spring 2016, Jefferson Academic Center 218

Professor: Prajjwal K. Panday

Email: ppanday@clarku.edu, Office: Jefferson Academic Center 105

Office hours: Tuesdays 2:00 pm – 4:00 p.m. and by appointment

Teaching Assistants:

Amanda Brackett (Section 902; Friday 8:00-9:50 a.m. in Jonas Clark 103; email: ABrackett@clarku.edu; Office Hours: Wednesdays 2:00-4:00 p.m. and by appointment in Jefferson Academic Center 105)

David Lukens (Section 901; Friday 10:00-11:50 a.m. in Jonas Clark 105; email: DLukens@clarku.edu; Office Hours: Mondays 1:00-3:00 p.m. and by appointment in Mezzanine Lab, Geography Building)

Leslie Gross Wyrzten (Section 903; Friday 12:00-1:50 p.m. in Jonas Clark 103; email: LWyrzten@clarku.edu; Office Hours: Tuesday and Wednesday 2:00 p.m.- 3:00 p.m. and by appointment in Mezzanine Lab, Geography Building)

This course provides a general introduction to the structure and function of the Earth system. It focuses on the principles, dynamics, and interactions of the biosphere, atmosphere, hydrosphere, and lithosphere, and the role of these Earth subsystems in determining life on Earth. Emphasis will be placed on developing an understanding of Earth as a dynamic environmental system. This course also focuses on environmental impacts on the Earth System that result from human-environment interactions at local and global scales.

Required text: Christopherson, R.W. 2015. *Geosystems: An Introduction to Physical Geography*. Eighth Edition. Prentice Hall, NJ.

Additional resources on Moodle

Grading: The final course grade will be based on the following:

25% Laboratory
25% First Midterm
25% Second Midterm
25% Final Exam

All students must enroll in one lab section.

Laboratory work is **essential** to the course, and should be completed as scheduled to receive credit for the lab. Each student must sign up for a lab section and attend that section. If you are unable to attend your regularly scheduled lab you need to work out an alternative solution with your TA *beforehand, not afterwards*. Labs start the second week of class. The score for labs will be deducted by 20% for each day they are late.

NO makeup tests are given. Students who miss a test without a documented and acceptable excuse (e.g. medical) will receive a score of zero for the missed test. Students with a valid documented reason for missing a test will be given a score for the missed test equal to their average score on other tests. If you know of a valid conflict with any of the exams, please contact Professor Panday **at least two weeks in advance** and arrange to take the exam early.

Schedule and Assigned Readings - GEOG. 104 - Spring 2016

Dates	Topic	Readings
Jan 19	Introduction to Earth System Science	Ch 1
21	Earth-sun relations, seasons	Ch 2
	<i>No Lab</i>	
26	Energy balance	Ch 4
28	Global temperatures	Ch 5
	<i>Lab 1: Albedo and remote sensing</i>	
Feb 2	Earth's atmosphere	Ch 3
4	Atmospheric circulation	Ch 6
	<i>Lab 2: Temperature in geographic perspective</i>	
Feb. 9	Oceanic circulation	Ch 6
11	Water and atmospheric moisture	Ch 7, 8, 9 and 14
	<i>Lab 3: Atmospheric pressure, wind, and circulation</i>	
16	Oceans and coastal processes	Ch 12
18	Review session	
	<i>No Lab</i>	
23	Mid-term 1	
25	Tectonics, earthquakes, and volcanism	Ch 16
	<i>Lab 4: Tsunamis and earthquakes</i>	
Mar 1	Global climate change	Ch 10
3	Global climate change	Ch 10
	<i>Lab 5: Daisyworld</i>	
March 8	No class – Spring Break	
10	No class – Spring Break	

Dates	Topic	Readings
March 15	Global climate change	Ch 10
17	Glacial processes and soils	Ch 17 and 18
	<i>Lab 6: Global climate change</i>	
22	Nutrient cycling	Ch 19
24	Energy flow in ecosystems	Ch 19
	<i>No Lab</i>	
29	Limiting factors and growth forms	Ch 19
31	Review session	
	<i>No Lab</i>	
April 5	Mid-term 2	
April 7	Ecological succession	Ch 19
	<i>Lab 7: Plant distribution and topography</i>	
14	Disturbance ecology	Ch 19
14	Disturbance ecology	Ch 19
	<i>Lab 8: Estimating the effect of deforestation on the carbon cycle</i>	
19	Biodiversity	Ch 19
21	Review session	
	<i>No Lab</i>	
26	Current topics	
28	Current topics	
	<i>No Lab</i>	
	Final exam	