

SAN DIEGO STATE UNIVERSITY
Department of Geography

Fall Semester, 2009
Geography 101
Principles of Physical Geography
TTh 11am-1230pm
Lecture hall: SH 247
Email tbiggs@mail.sdsu.edu

Instructor: Trent Biggs
Office: Storm Hall 317
Office Hours: TTh 330-430 pm
or by appointment

COURSE DESCRIPTION: Why is the Sahara Desert dry? Why are the Amazon Basin and African Congo wet? What are the causes and consequences of global warming? Where and why are there mountains? Physical geography addresses such questions by describing the spatial distribution of climate, water, soil, topography, and biota at the Earth's surface, the functional interactions between them, and their relationships with people. In this course we will describe the basic forces governing the distribution and flow of mass and energy over the Earth's surface, and will apply knowledge of those processes to better understand major environmental problems including climate change, pollution and desertification. The theoretical focus of the class is on the Earth as a set of interconnected systems governed by exchanges of mass and energy.

LEARNING OBJECTIVES: By the end of the course students should be able to

1) BASIC GEOGRAPHY

- a) Describe the discipline of geography and its areas of study.
- b) Name basic features of the global grid and their approximate location
- c) Describe different map projections and their (dis)advantages.

2) ATMOSPHERE AND ENERGY BALANCE

- a) illustrate the Earth's rotation and revolution and how they affect the energy balance, mass movements, and climate over space and time. Apply those principles to hypothesize about climate in other places;
- b) describe the role of nature and humans in controlling atmospheric composition and climate, including uncertainties in climate change science;

3) LITHOSPHERE

- a) identify locations on the Earth with active tectonic/volcanic features, and describe how tectonics interacts with surface processes (weathering and erosion) to produce landforms and soil properties;

4) HYDROSPHERE

- a) describe the spatial distribution of water resources and human impacts on water quality and quantity;
- b) identify the major processes controlling sea levels and ocean circulation, and identify the effects of global change;

5) BIOSPHERE

- a) describe the factors that govern the spatial distribution of ecosystems, biodiversity and biogeochemical cycles;
- b) analyze the effects of climate change and land use on ecosystems, and show on a map the location of some biodiversity hotspots, both in California and globally;

6) SCIENTIFIC PROCESS

- a) read and summarize articles about physical geography;
- b) critically analyze differing viewpoints on controversial issues, with a focus on differentiating scientific statements and value judgments;
- c) appreciate geographic science as both a quest for beauty and a method to analyze and address environmental problems.

The course includes both textbook readings and “Hot Topics” derived from current scientific literature.

A major theme of the course is the *role of questions* in science and geography. All readings and homework will be oriented around asking and addressing questions, including an appreciation of what we know and do not know about the Earth. Another theme is the role of *visualization and illustration* in forming conceptual models of geographic phenomena. Students will be expected to draw diagrams of their conceptual understanding more than recall memorized facts.

REQUIRED TEXT AND MATERIALS:

1. Strahler: Visualizing Physical Geography
Hardcopy (Binder Ready) are available at
- SDSU Book Store
- Online at www.wileyplus.com/buy
Softcopy is available at www.wileyplus.com/buy
** You need to buy either softcopy or hardcopy, but do not need both.
2. Additional articles will be posted on Blackboard.
3. ** CLICKERS are required **

GRADING: Homework (4 assignments)	25%
Class participation (clickers)	10%
Midterm # 1 (Oct 13)	20%
Midterm # 2 (Nov 10)	20%
Final exam (Dec 15)	25%

EXAMS: The content of exams will be drawn from the homework, readings, and material covered in lecture. Exams will be graded on a curve if the highest score is less than 95%. All exams will require one (1) green scantron sheet.

- **Missed exams** may be made up for exceptional circumstances. The make-up exam will be different and significantly harder than the original exam. If you miss an exam, you must contact the instructor within one week of the exam or you will receive a zero for that exam
- **Re-grades on exams.** Students may request that an exam be re-graded. This includes all questions and may either increase or decrease the score.

PARTICIPATION: Class participation will be assessed by clicker responses to in-class questions. Clicker responses may not occur in every class session, and will start in Week 3. Participation will be credited as % response rate + 10%. For example, if responses are reported for 90% of days when clickers are used, the student receives 100% credit for class participation.

** Excuses will not be accepted for missed clicker days, regardless of the reason **

LATE HOMEWORK: Homeworks will be docked 5% for each day late, including weekend days (e.g if it's due on Friday and turned in on Monday, that's $3 \times 5\% = 15\%$ grade reduction. No late homework will be accepted more than one week after the due date; homework handed in more than one week after the due date will be given a zero.

COURSE CONDUCT:

- **Cheating or plagiarism** on homework or exams will result in a zero for that assignment or exam. Further disciplinary action may result.
- **Missed classes.** Students must obtain notes from at least one other student if they miss a lecture. The instructor will not provide notes or review the lecture for students who missed a class.
- **Office hours.** Visits during office hours are encouraged. Meetings outside of established office hours may be made by appointment.
- **Emailing the instructor** is appropriate to set up office visits, and questions about course material may be emailed to the instructor. Answers to frequently-asked questions will be posted on BlackBoard.
- **Special needs** such as learning disabilities or other disabilities will be handled individually. *For special conditions during exams, special needs students must inform the instructor by September 15, 2009.* Confidentiality will be maintained in all cases.

TENTATIVE SCHEDULE OF TOPICS

WEEK	DATES	TOPIC	READINGS AND ASSIGNMENTS
1	Sept 1-3	Introduction: What is Geography? Earth and Sun, maps	STR: Ch1 Buy and register clickers
2	Sept 8-10	Atmosphere: Composition and structure, pollution	STR Ch 2 IPCC Summary pp. 1-3 Clicker questions begin
3	Sept 15-17	Energy and radiation: Seasons and greenhouse effect	STR Ch 2 cont' IPCC Summary pp. 2-4 IPCC Ch 1 pp. 96-97, 104-105 HW#1 due Sept 18 Clicker credit questions begin
4	Sept 22-24	Atmospheric temperature	STR Ch 3 IPCC Summary pp. 10-17
5	Sept 29-Oct 1	Atmospheric moisture and precipitation	STR Ch 4
6	Oct 6-8	Atmospheric circulation and climate	STR Ch 5 Zeng article (Sahel desertification) HW#2 due Oct 9
7	Oct 13-15	MIDTERM #1 Plate tectonics	STR Ch 8
8	Oct 20-22	Weathering, soils and agriculture	STR Ch 10.1, 15 Vitousek article (Hawai'ian soils)
9	Oct 27-29	Landforms: Watersheds, rivers and deltas	STR Ch 12 Service article (CA Deltas)
10	Nov 3-5	Global hydrological cycle and water resources	STR Ch 11 Kaiser (Salton Sea and Aral Sea) HW #3 due Nov 6
11	Nov 10-12	MIDTERM #2 Ecosystem structure and function	STR Ch 16.1 Myers et al article (sharks) Kriaajick article (invasive spp)
12	Nov 17-19	Global biogeochemical cycles, fire	Keeley article (fire) Socolow article (Global carbon)
13	Nov 24	Global biomes; hotspots	STR Ch 16.4, 16.5 Myers article (hotspots) Kareiva and Marvier article (Conservation)
14	Dec 1-3	Human societies and physical geography	Sachs article (Poverty)
15	Dec 8	Review	HW # 4 due Dec 11
FINAL EXAMINATION TUESDAY, DEC 15, 10:30 AM - 12:30 PM			

* STR=Strahler. The additional readings will be posted on Blackboard.

ADDITIONAL READINGS (on Blackboard)

Week 2-4: International Panel on Climate Change, Working Group 1, Summary for Policymakers

Week 6: Zeng, N., 2003. Drought in the Sahel. *Science*, 302(5647): 999-1000.

Week 8: Vitousek et al., 2004. Soils, Agriculture, and Society in Precontact Hawai'i. *Science*, 304(5677): 1665-1669.

Week 9: Service, R.F., 2007. Delta Blues, California Style. *Science*, 317(5837): 442-445.

Week 10: Kaiser, Battle over a dying sea, *Science* 284: 28-30
Stone, Aral Sea's Grim Legacy, *Science* 284: 30-33

Week 11: Kriajick, Winning the war on island invaders, *Science* 2005.

Myers et al., Cascading effects of the loss of apex predatory sharks, *Science* 2007.

Week 12: Keeley et al., 2004. Lessons from the October 2003 wildfire in Southern California. *Journal of Forestry*, 102: 26-31.

Socolow and Pacala, A Plan to keep carbon in check. *Scientific American* September 2006

Week 13:

Myers et al, Biodiversity hotspots for conservation priorities. *Nature*, February 2000.

Kareiva and Marvier, Conservation for the People. *Scientific American* Oct 2007.

Week 14:

Sachs, *The Geography of Poverty*. *Scientific American* 2001.

READINGS: Strahler, Visualizing Physical Geography, is available in both softcopy and hardcopy form. You may purchase both, but you only need to purchase one or the other for the class.

Access to the softcopy version of Strahler is through WileyPLUS:

Registration Code

You will need a registration code to access **WileyPLUS**. It's your choice to buy it with or without the printed text:

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In order to access the book chapters, click on "Read Study and Practice":

The screenshot shows a web browser window displaying the WileyPLUS interface. The browser title is "WileyPLUS - Mozilla Firefox" and the address bar shows "http://edugen.wiley.com/edugen/student/mainfr.uni". The page header includes navigation links: "WileyPLUS: Home | My Profile | Help | Contact us | Logout". The main content area is titled "Strahler, Visualizing Physical Geography, 1e" and "GEOG 101 Physical Geography". Below the title, there is a navigation menu with "Home", "Read, Study & Practice", "Assignment", and "Gradebook". The user is logged in as "TRENT BIGGS" and the instructor is "TRENT BIGGS". A red circle highlights the "Read, Study & Practice" link in the main content area. To the right, there is a sidebar with a "Need technical support?" section and a "WILEY PLUS" logo. The footer contains "License Agreement | Privacy Policy | © 2000-2009 John Wiley & Sons, Inc. All Rights Reserved. A Division of John Wiley & Sons, Inc." and "Ver".