GEOGRAPHY 250: ***PHYSICAL GEOGRAPHY***

DEPARTMENT OF GEOGRAPHY
COLLEGE OF ECOSYSTEM SCIENCE & MANAGEMENT

General Information:

Course: GGR250 - Physical Geography and Lab - 4 credit hours
Term: fall, 2000
Classroom: Building 82, SWFSC room 17
Time/day 9:10-10:00 am MWF (Lecture)
7:00-9:30 pm M(Lab A, room 135)
7:00-9:30 pm Tu (Lab B, room 135)
7:00-9:30 pm W(Lab C, room 136)
Instructor: Dr. Leland Dexter, TAs: Mr. Brent Kempton, Ms. Elisa Wenker
Office hours: 10:00 am-11:00 am & 1:00-2:00 pm M & W or by appointment
Office: Building 82, SWFSC room 205
Phone: 523-6535
E-mail: lee.dexter@nau.edu
Web: http://www.cesm.nau.edu/~lrd

Prerequisites:

None

Course overview:

Physical Geography provides an overview of the non-cultural (primarily) aspects of the environment in which we live. A systematic approach to the interaction of the lithosphere, hydrosphere and atmosphere will be presented with an emphasis on climate and landscape. Visual aids, laboratory exercises and an independent research project will be used to further develop the concepts presented in lecture. The thematic focus of this course is e*nvironmental consciousness*. The Earth's environmental elements operate as a vast system. This course is unique in that it ties all of these elements into a holistic integrated presentation. This course emphasizes the connectivity between the energy and matter elements of our environment, the dependency of one environmental entity on another and the very complicated network of feedback processes involved. The distribution block of this course is *laboratory science*. One unit of the four is dedicated to hands-on, laboratory-based experiences including field trips and work with hand specimens, maps, charts, computer software etc. The scientific method as a problem-solving tool is developed in the laboratory.

Essential skills for this course include: 1) *critical analysis* of current ideas in physical processes as well as issues of environmental concern, 2) *scientific inquiry* as an approach to evaluating and/or solving problems in the physical world, and 3) *quantitative analysis* where numerical tools are appropriate in evaluating and/or solving problems in the physical world.

Course objectives:

The specific objectives of the course are:

- Students will be able to describe and critically analyze basic operations of major Earth processes.
- Students will be able to describe and explain how these processes are linked as a system.
- Students will be able to describe and critically analyze how this system may be changing both naturally and as a consequence of human activity.

- Students will be able to map general spatial distribution of these processes and/or the consequences of these processes
- Students will be able the apply the scientific method in solving problems
- Students will gain hands-on experience constructing various maps, diagrams and charts, carry out quantitative/technology based exercises, analyze specimens of Earth materials, and write short descriptions, statements or reports pertaining to key elements of the course material.

Course structure and approach:

Physical Geography has the distinction of being a holistic and integrative science. This course blends and connects fields of inquiry that are often viewed as separate entities in the traditional university structure. The systems approach used in this course emphasizes the connectivity between the energy and matter elements of our environment, the dependency of one environmental entity on another and the very complicated network of feedback processes involved.

A variety of pedagogical techniques are required to deliver this kind of course. Since students are not expected to have a science background and, indeed, this course provides the introductory framework that would be very valuable to have before delving into more specialized disciplines, the lecture is the prime tool of delivery. This allows the instructor to focus and guide the development of the subject quickly enough to cover all the necessary components in a single semester.

Many other ancillary teaching tools are used, however, including 35 mm slides, video tapes, World Wide Web products, thought experiments, live in-class demos using laboratory or home-made props, discussion periods for question and answer interchange, original student projects for creative and critical thinking, a structures set of laboratory exercises are conducted, each with its specific set of objectives, procedures and products. Local field trips are incorporated into the course. Often these are walking field trips within the local campus environment.

Textbooks and required materials:

- Christopherson, R. W., 2000, *Geosystems*, 4th ed. Prentice Hall Inc., Upper Saddle River, New Jersey. (Required reading).

- Dexter, L. R., 2000 *Physical Geography Lecture Supplement*. Coyote Printing, 1300 Milton Rd. Suite 113 (Required).

- A few additional tools will be used in the lab including a simple scientific calculator, a drafting scale (ruler), a protractor, some colored pencils and a high quality eraser.

- Access to the World Wide Web and a computer with a CD-ROM reader.

Assessment of Outcomes

Required components of the course include:
- Attendance and participation in lecture and lab
- Assigned readings from the required text.
- Lab exercises in a variety of formats
- Two in-term exams and one semi-comprehensive final exam, about 70% lecture based; 30% text, videos etc.
- One independent, written, learning-portfolio project.
- A cooperative attitude toward the learning experience.

Modes of evaluation within the required components can include:

- Participation in class questions and discussion demonstrating the student's ability to critically analyze by interactive dialog theories and field data pertaining to the operation of major Earth processes, how these processes are linked as a system and how these processes may be changing due to human activity (objectives 1, 2 and 3).
- Multiple-choice exam questions pertaining to lecture, reading, audio-visuals, and field trips. These questions demonstrate the student's ability to discriminate where discrete choices may be involved. Questions will be directed toward theories and field evidence pertaining to the operation of major Earth processes, how these processes are linked as a system and how these processes may be changing due to human activity (objectives 1, 2 and 3).
- Short written-answer exam questions pertaining to lecture, reading, audio-visuals, and field trips to demonstrate the student's ability to critically discuss pointed aspects of course topics. Questions will be directed toward theories and field evidence pertaining to the operation of major Earth processes, how these processes are linked as a system and how these processes may be changing due to human activity (objectives 1, 2 and 3).
- Calculation-based exam questions pertaining to lecture and readings to demonstrate the student's ability to numerically analyze elements of theories and field evidence pertaining aspects of the course topics. Calculations will be directed toward the operation of major Earth processes, how these processes are linked as a system and how these processes may be changing due to human activity (objectives 1, 2 and 3).
- Illustration / map based exam questions pertaining to lecture, reading, audio-visuals, and field trips to demonstrate the student's ability in understanding the spatial distribution of major Earth processes and how these processes are linked as a system (objectives 2 and 4).
- Longer essay exam questions pertaining to lecture, reading, audio-visuals and field trips to demonstrate the student's ability to critically discuss in-depth aspects of the course. Questions will be directed toward theories and field evidence pertaining to the operation of major Earth processes, how these processes are linked as a system and how these processes may be changing due to human activity (objectives 1, 2 and 3).
- Hands-on laboratory based exercises including construction of maps, charts and graphs, identification of specimens, analysis of numerical data by calculation to support concepts developed in the lecture portion of the course. (objectives 4, 5 and 6).
- Collecting, maintaining and organizing data independently for a final project (objectives 5 and 6).
- Writing a critical analysis paper pertaining to some aspect of the course material for a learning portfolio project (objectives 1, 2, 3, 4, 5, and 6).

Point values for the evaluation components:

- 1 short quiz 20 points.
- 2 In-term exams 100 points each
- 1 Comprehensive final exam 200 points.
- 1 Learning portfolio project 200 points
- Lab grade 200 points.
- Cooperation in the learning process 80 points
- Total possible 900 points.

Grading:

A > 90%, B > 80%, C > 70%, D > 60% F < 60% total possible points
or curved to the class distribution if lower.

Learning portfolio project:

For your written project you will need to select one of the major topics from this course and identify how it impacts the human existence and conversely, how humans impact it.

The topic should be one of those listed in the *Course schedule* section of the syllabus. First, identify the spatial scope for your research. The scope can be of any aerial extent (global, national, regional, state, or community).

Next, research the aspects of the physical-human interactions. You may use libraries, the Internet, interviews (live and telephone), questionnaires and even original field research in some cases. As you compile your research, keep in mind the processes we are discussing in class. Be sure to tie pertinent class material into your outside research material.

Write your results up in standard research paper format (e.g. abstract, introduction, methods, discussion conclusion, references, appendix). DO NOT exceed 5 typewritten pages for the body of your paper (excluding the abstract, references and appendix and any maps or figures). See the attached Department of Geography writing guideline for additional guidance.

The project products will be due no later than November 20th. Late projects will be penalized at the rate of 20 points per class meeting.

The project is worth 200 class points and is graded as follows:

Originality and Creativity	50 points.
Organization and presentation	50 points.
Content and technical accuracy	50 points.
Grammar, syntax & spelling	50 points.

Course outline (tentative and subject to schedule changes):

August		
28 M Introduction to the course	Ch.1	
30 W Tools – maps, GIS & remote sensing	Ch 1	
September		
1 F Systems, energy, matter & time	Ch 1	
4 M Labor Day, no class		
6 W Systems, energy, matter & time (cont.) **Quiz**		
8 F Cosmology, the Universe & Planet Earth	Ch 1, 3	
11 M Influences on the Earth's energy inputs		Ch 2
13 W The heat flow and temperature subsystem	Ch 5	
15 F The atmospheric circulation subsystem	Ch 6	
18 M The atmospheric circulation subsystem (cont.)		
20 W The atmospheric moisture subsystem	Ch 7	
22 F Slides		
25 M Air mass & storm subsystems	Ch 8	
27 W Air mass & storm subsystems (cont.)		
29 F Climate on Earth	Ch 10	
October		
(2-6 Dexter at ISSW)		
2 M Exam Review	Ch 10	
4 W ***Exam #1***		
6 F Open day		
9 M Climate change		
11 W The hydrologic cycle subsystem	Ch 9	
13 F The rock cycle subsystem	Ch 11	
16 M The plate tectonics subsystem	Ch 11	
18 W The plate tectonics subsystem (cont.)		
20 F Structural landform subsystems	Ch 12	
23 M Structural landform subsystems (cont.) & earthquakes		
25 W The rock weathering subsystem	Ch 13	

27 F	Slides	
30 M	The soils subsystem	Ch 18
November		
1 W	The biosphere subsystem	Ch 19, 20
3 F	***Exam #2***	
6 M	The hillslope subsystem	Ch 13
8 W	The hillslope subsystem (cont.)	
10 F	Veteran's Day, no class	
13 M	The fluvial subsystem	Ch 14
15 W	The fluvial subsystem (cont.)	
17 F	The ocean/coast subsystem	Ch 16
20 M	The ocean/coast subsystem ***(Project Due)***	
22 W	Slides	
24 F	Thanksgiving, no class	
27 M	The Arid regions special climate case	Ch 15
29 W	The Cold regions special climate case	Ch 17
December		
1 F	Glacial subsystems	
4 M	Glacial subsystems	
6 W	Slides	
8 F	The fate of Earth, The Big Picture, Review	Ch 21

13 W ***Exam 3 and Review Exam*** 7:30-9:30 AM.

Course policies:

Students are expected to attend each class meeting and tardiness is discouraged. To this end, occasional spot attendance checks will be made.

While a certain amount of collaboration among students is encouraged in this class, each student is expected to complete his or her own assignments. Anyone found plagiarizing assignments or cheating on exams will fail the course.

Exams may not be made up unless accompanied by an official institutional excuse.

Laboratory policies and exercise due dates are determined by your lab teaching assistant.

A summary of standard university policies is attached at the end of the syllabus.

Professor's philosophy:

My main focus, among all of my professorial roles, is teaching. I consider myself to be a dedicated and enthusiastic instructor.
I am considered to be demanding in expectations but fair in grading and evaluation by most of my past students. My classes tend to be rich in content and I present you with a lot of material from which to learn.

In return for the amount of work I put into resource and class preparation, I expect you to be willing to work hard in absorbing as much of the material as you can. I would much rather work with an interested and enthusiastic C or D student than a bored and uncooperative A or B student. If you work from this attitude, you and I will get along just fine. If, on the other hand, you view your university experience as simply paid admission to a diploma, you and I may have conflicting objectives and attitudes.

To this end, some of the points awarded in this class reflect how seriously you approach the learning process as a cooperative endeavor. Items included in this group of points are attendance, punctuality, enthusiasm and cooperation. Some of these points will be objectively tracked (e.g. attendance) and some are my subjective opinion. You will all start out with the maximum number of points pre-awarded in this area. As the end the class approaches, a demerit system will be used if you have been deficient in these areas.

Northern Arizona University policy statements:

SAFE ENVIRONMENT POLICY

NAU's Safe Working and Learning Environment Policy seeks to prohibit discrimination and promote the safety of all individuals within the university. The goal of this policy is to prevent the occurrence of discrimination on the basis of sex, race, color, age, national origin, religion, sexual orientation, disability, or veteran status and to prevent sexual harassment, sexual assault, or retaliation by anyone at this university. You may obtain a copy of this policy from the college dean's office. If you have concerns about this policy, it is important that you contact the departmental chair, dean's office, the Office of Student Life (523-5181), the academic ombudsperson (523-9368), or NAU's Office of Affirmative Action (523-3312).

STUDENTS WITH DISABILITIES

If you have a learning and/or physical disability, you are encouraged to make arrangements for class assignments/exams so your academic performance will not suffer because of the disability or handicap. If you have questions about special provisions for students with disabilities, contact the Counseling and Testing Center (523-2261). It is your responsibility to register with the Counseling and Testing Center. Application for services should be made at least eight weeks before the start of the semester. If the Counseling and Testing Center verifies your eligibility for special services, you should consult with your instructor during the first week in the semester so appropriate arrangements can be made. Concerns related to noncompliance with appropriate provisions should be directed to the Disability Support Services coordinator in the Counseling and Testing Center.

INSTITUTIONAL REVIEW BOARD

Any study involving observation of or interaction with human subjects that originates at NAU-including a course project, report, or research paper-must be reviewed and approved by the Institutional Review Board (IRB) for the protection of human subjects in research and research-related activities. The IRB meets once each month. Proposals must be submitted for review at least fifteen working days before the monthly meeting. You should consult with your course instructor early in the course to ascertain if your project needs to be reviewed by the IRB and/or to secure information or appropriate forms and procedures for the IRB review. Your instructor and department chair or college dean must sign the application for approval by the IRB. The IRB categorizes projects into three levels depending on the nature of the project: exempt from further review, expedited review, or full board review. If the IRB certifies that a project is exempt from further review, you need not resubmit the project for continuing IRB review as long as there are no modifications in the exempted procedures. A copy of the IRB Policy and Procedures Manual is available in each department's administrative office and each college dean's office. If you have questions, contact Carey Conover, Office of Grant and Contract Services, at 523-4889.

ACADEMIC INTEGRITY

The university takes an extremely serious view of violations of academic integrity. As members of the academic community, NAU's administration, faculty, staff, and students are dedicated to promoting an atmosphere of honesty and are committed to maintaining the academic integrity essential to the educational process. Inherent in this commitment is the belief that academic dishonesty in all forms violates the basic principles of integrity and impedes learning. Students are therefore responsible for conducting themselves in an academically honest manner. Individual students and faculty members are responsible for identifying instances of academic dishonesty. Faculty

members then recommend penalties to the department chair or college dean in keeping with the severity of the violation. The complete policy on academic integrity is in Appendix F of NAU's Student Handbook.

AGREEMENT OF UNDERSTANDING:

I have read the course syllabus for GGR 250, Physical Geography. I have had the opportunity to ask questions about the syllabus and course. I understand the content of the syllabus and agree to be responsible for the requirements and course policies.

Signature_____

Printed name_____

SSN_____

Detach and turn in before the end of the second week of class to avoid administrative drop.