OBJECTIVE: Human have always affected their environment. Now, as the world’s population moves past the six billion mark and with the growth of technology and economies, the potential for affecting the world is far greater than ever. Will technological advances keep pace with our species’ impact on the world and our need for resources, or will the growth of our population outstrip the resources we need to maintain our standard of living? This course examines the growth of our population and the effects it has had on the world’s environments and tries to predict where we are likely to be as the 21st Century unfolds. These are not just academic questions; they involve our futures and the futures of our children. The decisions we make and the decisions others make on our behalf will affect the future toward which we move.

COURSE CONTENT: A review of basic environmental processes, the growth of the human population and its technology and the effects of these on resources including food, energy supplies, climate, environmental contaminants, and natural resources.

ATTENDANCE: Required-Bonus for good attendance.

CLASS FORMAT: Lecture/Discussion and, occasional field trips to sites on campus.

OBJECTIVE: Trace solar energy flows, mineral cycles and material transfers that create the earth’s surface environments.

COURSE CONTENT: The first part of the course deals with weather. We will cover the structure of the atmosphere, how energy distribution creates pressure cells and wind systems, extreme weather phenomena (i.e., thunder storms, hurricanes, tornadoes), temperature induced ocean currents, and the formation of the earth’s climates. We will discuss how weather and climate change through time due to natural and human causes (i.e., El Niño Events and long term global temperature changes). The second part will deal with plate tectonics and how it creates our oceans, continents as well as smaller scale landforms (e.g., streams, deserts). The last part will deal with the interaction of landforms and climate to see how the earth’s soils and ecological zones form.

ATTENDANCE: Attendance will be used to adjust final grades.

CLASS FORMAT: lectures

LABORATORY/FIELD EXPERIENCE: ENVL 2105 is a separate 1-credit course that is allied with this lecture course.

LAB MANUAL: On course website

EVALUATION: Grade is based on three take home examinations, each dealing with a third of the course work. Attendance and class participation will also be considered.
OBJECTIVES: The different features of the natural environment are distributed in logical patterns over the face of the earth. These patterns are controlled by the flow of energy and materials at the earth's surface. Physical geography defines the characteristics of these different patterns and explains why the particular patterns exist. The different components of the natural environment which will be studied are: Climate and weather, Vegetation, Soils, Landforms, water resources.

COURSE CONTENT: This course will examine the variation which exists within a single component and the interrelationships between the different components. We will also discuss how society must adapt to restrictions placed upon it by the environment and, in turn, how the activities of society have altered the environment. A greater understanding of how the natural environment "works" allows us to better evaluate the environmental problems and decisions which face us today. In summary, Physical Geography helps us to understand how our planet functions, its limitations, and its potential.

TEXTBOOK: A.N. Strahler: Physical Geography
COURSE CONTENT: One of three intermediate courses required of all ENVL majors. This course is a survey of the science of ecology, covering evolution and adaptation of species to the environment, ecological communities and their development in time and space, population dynamics and regulation, predation, competition between species, energy flow and nutrient cycling. Each topic will be considered with reference to practical applications and relevance to human societies. Both local and global perspectives will be included.

PREREQUISITES: ENVL 1100, BIOL 1100, Corequisite ENVL 2205 for ENVL majors.

CLASS FORMAT: Lectures with discussion. Some in class exercises and quizzes. Several short essays/take-home assignments and Three exams. This course includes a lab, ENVL 2205, as a corequisite.

READINGS: To be determined.

PAPERS/PROJECTS: A paper reviewing the current literature of a topic in ecology is required.

EVALUATION:
Exams 60%
Quizzes and Assignments 30%
Attendance and Participation 10%
ENVL 2205
Ecological Principles Lab
Michael Geller
001 W 08:30AM-11:15AM
002 W 12:30PM- 03:25PM
Fall 2006

COURSE CONTENT: The laboratory is designed to complement ENVL 2200, Ecological Principles, and should be taken concurrently. It includes exercises in population ecology, identifying organisms, community sampling, and ecological modeling using Stella, and applied ecology. Students will analyze data using Microsoft Excel. For students majoring in MARS or BIOL, the laboratory is optional.

PREREQUISITES: ENVL 1100, BIOL 1100, corequisite ENVL 2200.

LABORATORY/FIELD: Two Saturday field trips are required.


PAPERS/PROJECTS: Several papers and data tables, lab practicum on plant identification, ecological model based on Stella.

EVALUATION: Papers 40%, Data Tables 30%, and Quizzes 30%.
OBJECTIVES: Environmental Issues deals with environmental problems in their historical, cultural, political, social, and scientific contexts. Students will learn to develop and present specific issues at each level.

COURSE CONTENT: This is a course in environmental decision making. We will look at several specific issues in depth, probably including toxic substances, waste disposal, land use planning, and world population and resources. Problems will be studied at the local, state, national, and international level, to increase our understanding of the institutions, laws and other means created to deal with them. We will also study the flow of resources and energy in modern industrial society and its impact on the environment.

PREREQUISITES: ENVL 1100

COREQUISITE: ENVL 2305 is required of ENVL majors.

ATTENDANCE: Required. Excessive absence will be penalized.

CLASS FORMAT: Classroom laboratory/field.

READINGS: Various current articles.

PAPERS/PROJECTS: This is a writing across the curriculum (WAC) course, emphasizing Issue briefs of two to three pages that clearly set out the facts in a particular case and propose alternative courses of action. I stress learning to use library information sources in this course. There will also be one power point presentation each in class and lab.

LABORATORY/FIELD EXPERIENCE: Library research techniques; use of field trips; a group project on campus sustainability and a class project on watershed restoration.

EVALUATION: Papers and projects.
OBJECTIVE: To teach students the art and science of statistics; that is, the design of experiments, collection, analysis, and interpretation of data. The data used will frequently be "real world" datasets from ecological sources.

COURSE CONTENT: Students will learn basics of populations sampling, probability, hypothesis testing, measures of central tendency, measures of dispersion, t-tests, chi-square tests, ANOVA, and regression techniques.

PREREQUISITES: High school algebra.

ATTENDANCE: Mandatory.

CLASS FORMAT: Lecture and lab.

LABORATORY/FIELD EXPERIENCE: There will be a 2 hour per week computer lab to explore data sets and analyses by SAS in detail.


PAPER/PROJECTS: Student will be given homework problems and computer assignments.

EVALUATION: Quizzes, 2 Exams,(Lecture and Lab), 1 comprehensive Final Exam,(Lecture and Lab), homework assignments, and class participation.
OBJECTIVES: Introduce students to the most common forms of environmental pollution in soils, air and waterways to highlight the most aspects of major environmental laws and how they are used to regulate pollution in different media.

COURSE CONTENT: The class will cover the most common forms of pollution in the three media: air, water and soil. Emphasis will be placed on where the pollutants come from, their residence time in the media of interest and potential health impacts. We will also cover some of the environmental laws that are of relevance to each media. eg. the Clean Air Act (1970) and Clean Water Act(1972). Class projects include tap and rain water monitoring, Hammonton lake geochemical study and pollution in your home areas.

PREREQUISITES: CHEM 2110 or 2120, not open to freshman

ATTENDANCE: Mandatory.

CLASS FORMAT: Lecture format, with considerable discussions and field trips. Class participation is expected.

LABORATORY/FIELD EXPERIENCE: This course is taught through practical experience. We will work on a number of class projects on pollution.

TEXTBOOK/READINGS: Understanding Environmental Pollution. 2nd ed. M.K. Hill Cambridge Press.

PAPERS/PROJECTS: There will be one project on a topic to be given in class. It constitutes 15% of your grade (5% presentation and 10% report).

EVALUATION: Grades will be based on assignments, class quizzes, a project and a final exam. Ten percent of your grade will be based on class participation. Project/presentation 5% and 10% report Final Exam (30%), Quizzes (35%), Assignments (10%), and Other class projects (participation) 10%
OBJECTIVE: This course examines the basic physical, chemical, and biological properties of soils. These properties are related to the climate, vegetation, and other aspects of the environment. By understanding the properties of soils we can better understand how to use soils without causing environmental degradation.

COURSE CONTENT: The course begins by examining basic paradigms of soil genesis. The physical description of soils is learned by extensive practice in the field. Samples collected during the field trips are used for lab analyses. After the field component, soil chemistry, biology, soil water movement, and soil classification are examined. Application of their knowledge to real world problems is included.

PREREQUISITES: ENVL 1100, ENVL 2100, CHEM 2110, or POI.

ATTENDANCE: It is difficult to pass this course without attending class regularly.

CLASS FORMAT: Lecture/Discussion.

LABORATORY/FIELD EXPERIENCE: There is a minimum of 3 field trips during class time and 1 field trip on Saturday. Laboratory analysis is performed on samples collected on the field trips.

READINGS: Text, Lab manual & materials on reserve.

PAPER/PROJECTS: Research paper which examines the effect of a soil forming factor on soil properties.

EVALUATION:
60% - 3 Exams
10% - Lab reports
15% - Problem assignments
15% - Research paper
OBJECTIVE: Examine the flow of water into, through and out of the earth’s watersheds

COURSE CONTENT: The course first deals with the physical nature of water and its importance to people. The bulk of the course involves discussions on what a watershed is and how to measure it, followed by discussions on precipitation, evaporation, surface runoff, water flow in the aeration zone, stream flow, stream geomorphology, flooding/flood prediction, groundwater flow, and groundwater quality/contamination. Each discussion will involve a qualitative discussion of the subject followed by its quantitative analysis (i.e., calculations, modeling) and the impact of people.

PREREQUISITES: ENVL 2100 or GEOL 2101 or permission of instructor

ATTENDANCE: Attendance will be used to adjust final grades.

CLASS FORMAT: lectures

LABORATORY/FIELD EXPERIENCE: Approximately 10 technical reports will be written on various subjects encountered in the lectures (see web site). These reports will involve field measurement, web data searches, map study, calculations, modeling and the clear presentation of the results.

LAB MANUAL: On course web site

PAPERS/PROJECTS: See Laboratory/Field Experience

EVALUATION: Grade is based on the technical reports. Attendance and class participation will also be considered.
ENVL 4600-001
Environmental Studies Seminar
Tait Chirenje
001 M  03:35PM-04:50PM (This course will meet every other week)
Fall 2006

OBJECTIVES: To expose students to a variety of speakers presenting their research, in order to increase awareness of the diversity of the environmental sciences, and of research, graduate, and professional opportunities available.

COURSE CONTENT: Topics covered span the breadth of the physical and biological sciences, stressing the interdisciplinary nature of environmental sciences. Speakers will be drawn from the fields of natural resources, regulation and policy, and emerging technologies in the environmental sciences.

ATTENDANCE: Attendance is required.

CLASS FORMAT: Lecture/Seminar

READINGS: None required.

PAPERS/PROJECTS: Each student will prepare an abstract of one of the seminars presented during the semester (250 words).

LABORATORY/FIELD EXPERIENCE: Does not include lab work. May take a field trip.

EVALUATION: Grades are assigned based on reflection papers on the talks.
OBJECTIVE: Examine the use of Global Positioning System (GPS) for the collection of precise locations of environmental data. Course will introduce students to the theoretical background of GPS, data collection, limitation of the system, computer data processing, and integration of the data with Geographic Information Systems.

COURSE CONTENT: Theory of GPS, geometry of locating points. Use of software for pre-operation planning. Data collection. Post collection processing of data and Integration of data with GIS.

ATTENDANCE: Absolutely mandatory

CLASS FORMAT: Lecture/Seminar with hands on field experience.

READINGS: Manufacturer manuals for field unit and software. Instructor generated handouts. Journal articles.

PAPERS/PROJECTS: Computer database files/locations and Computer (GIS) map of locations

LABORATORY/FIELD EXPERIENCE: Most of the course will involve field collection of data and analysis of problems associated with data collection.

EVALUATION:
1. Exam on theory
2. Exam on operation of equipment.
3. Exam on use of computer software.
4. Field practical on data collection.