

1 ☐ **EVPP 110**  
**“Ecosphere: Environmental Science I”**

Fall Semester 2003

GMU

Instructor: Dr. Kim Largen

Sec 001: MW 9:00am-10:15am

2 ☐ **Agenda 8/25/03**

✓ Introduction

– in-class activity

✓ Distribution & review of syllabus

– administrative details

– course overview

✓ Introduction to environmental science (Environmental Interrelationships, chapter 1, introduction)

✓ In-class activity

3 ☐ **In-Class Activity #1: Environmental Issues**

✓ work in groups of 3-5 students

✓ spend 5 minutes discussing the most serious environmental issues/problems

✓ agree to a ranking of the top three (with #1 being the most significant)

✓ on a piece of paper write the following information:

– names of group members

– numbered list of top three issues

– 3-5 sentence justification for top issue's rank

✓ all papers are to be submitted

✓ volunteers can summarize their group's list and justification

4 ☐ **Introduction**

✓ Instructor

– Education

– Employment experience

• non-teaching

• teaching

5 ☐ **Administrative Details**

✓ Facility

✓ Class Format

✓ Course Syllabus

- lecture
- laboratory
- ✓Preparing for Class
- ✓Course Overview

## 6 ☐ Administrative Details

- ✓Facility
  - Restroom Locations
  - Fire Safety
    - Classroom evacuation routes
      - fire exits
      - posted evacuation plan
    - Passable aisles
      - store personal belongings under seats

## 7 ☐ Administrative Details

- ✓Class Format
  - Time
    - MW 9:00am-10:15am
      - full class period, no break
    - Labs, either W, R, F
  - Agenda
    - Lecture
      - lecture
      - discussion
      - in-class activities/assignments

## 8 ☐ Administrative Details

- ✓EVPP 110 website
  - <http://mason.gmu.edu/~klargen>
    - syllabus, lecture outlines, study guides, etc.
    - distribution of additional information

## 9 ☐ Administrative Details

- ✓Class Conduct Expectations
  - ***Conduct that interferes with students' or instructor's ability to hear and/or focus on lecture cannot be tolerated***
    - arrive on time
    - stay until end of class
    - no use of cell phones, pagers, music players
    - no side conversations with fellow students

## 10 ☐ Course Syllabus

- ✓Course goals
  - designed as two-semester lab science sequence
    - EVPP 110

- EVPP 111
- fulfills the University General Education requirements for undergraduate students
  - for information on requirements see
    - [www.gmu.edu/catalog/gened/index.html](http://www.gmu.edu/catalog/gened/index.html)

## 11 ☐ Course Syllabus

- ✓ Course goals
  - study components and interactions that make up the natural systems of earth

## 12 ☐ Course Syllabus

- ✓ Course goals
  - course will teach basic concepts in
    - biological
    - chemical
    - physical
    - and earth sciences
  - in an integrated format
  - through a combination of lecture, laboratory, and field exercises
    - lab syllabus will be presented and discussed in lab meetings

## 13 ☐ Course Syllabus

- ✓ Course goals
  - Students completing the course are expected to
    - demonstrate an understanding of
      - basic components of the natural world
      - basic laws of natural systems
      - how they interact to produce the natural phenomena of planet Earth
    - gain an appreciation of
      - complexity of natural systems
      - linkages which can complicate human efforts to manage the environment

## 14 ☐ Course Syllabus

- ✓ Course goals
  - Students completing the course are expected to
    - recognize & be able to apply basic scientific concepts such as
      - hypothesis, experimentation, observation, substantiation, proof, prediction
    - evaluate scientific information and draw appropriate inferences and conclusions from it
    - distinguish between
      - issues subject to scientific analysis
      - those appropriate to other modes of inquiry

## 15 ☐ Course Syllabus

- ✓ Course Instructors
  - Lecture
    - Dr. Kim Largen
      - Office: David King (DK) Hall, Room 3047

- » M & W: 8:15am-8:45am & 10:30am-11:00am
- » R: 10:00am-11:00am
- Phone: 703-993-1033
- Mailbox: DK Room 3042-3043
- email: klargen@gmu.edu

## 16 ☐ Course Syllabus

- ✓ Course Instructors
  - Lab
    - graduate teaching assistants
      - Hari Dulal
      - Alexander Wooten
    - contact info will be presented in lab

## 17 ☐ Course Syllabus

- ✓ Textbooks and Supplies
  - Lecture
    - *Environmental Science: A Study of Interrelationships*, 9th Edition, by Enger & Smith
      - many excellent instructional resources available at textbook website at
        - » <http://www.mhhe.com/environmentalscience>
  - Laboratory
    - *EVPP 110 Lab Manual*

## 18 ☐ Course Syllabus

- ✓ Attendance
  - attend every lab and lecture
  - arrive on time and remain until end of class
  - students are responsible for being aware of all information and announcements presented in class whether present or not
  - lab absences result in a zero for that week

## 19 ☐ Course Syllabus

- ✓ Grading
  - Overall course grade = 1000 points
    - 75% from lecture (750 points)
    - 25% from lab (250 points)

## 20 ☐ Course Syllabus

- ✓ Grading
  - Lecture grade = 750 points
    - based on
      - three exams (225 points each)
        - » multiple choice, fill-in-the-blank, true/false, matching, short answer
        - » on material from lecture and lab
        - » make-ups at discretion of instructor
      - in-class activities (75 points total)
        - » unannounced (unscheduled)
        - » no make-ups

## 21 ☐ Course Syllabus

✓ Grading

- Laboratory grade = 250 points
  - based on
    - weekly lab write-ups, assignments, activities
    - current issue project/presentation
  - lab instructor will address details

22 ☐ Course Syllabus

✓ Grading

- Scale
  - 10 percent grading scale will be used unless dictated otherwise by the college
    - if college dictates the use of the + and - system, it will be implemented

23 ☐ Course Syllabus

✓ Cancelled Classes

- call 703-993-1000 for official notification of cancelled classes
- if an exam is scheduled for a day on which classes are cancelled (due to weather or any other reason), the exam will be given during the next scheduled class

24 ☐ Course Syllabus

✓ Honor Code

- students are expected to read and adhere to GMU Honor Code
- copying data, falsifying data, cheating on assignments and exams are considered violations of the Honor Code

25 ☐ Course Syllabus

✓ Lecture Schedule (syllabus page 3)

- provides topics to be covered each week and required reading associated with these topics
  - most required reading comes from textbook
  - some required reading will come from internet
    - especially for topics not covered at all or not covered well in text
- provides exam dates
  - 9/29 - exam 1
  - 11/3 - exam 2
  - 12/15 - exam 3

26 ☐ Administrative Details

✓ course schedule

- class meets
  - 8/25 through 12/3
  - Non-instructional days
    - 9/1 - Labor Day
    - 10/13 - Fall Break (Columbus Day)\*
    - 11/26 - Thanksgiving (Wednesday)
  - \* **NOTE: Mon classes meet on Tue 10/14**

27 ☐ Administrative Details

✓ Preparing for Class

- read assigned portions of textbook and internet sites
- read pertinent unit objectives
- outline each chapter
- complete review questions at end of each chapter
- use study guides
- use instructional resources available at textbook website
- ***ask for help when needed!***

## 28 ☐ Administrative Details

- ✓ Preparing for Class
  - having trouble?
    - Counseling Center offers variety of sessions
      - academic counseling
      - stress management
      - relaxation
      - improving concentration
      - exam strategies

## 29 ☐ Course Overview

- ✓ what is environmental science?
  - interdisciplinary nature of this science
  - why we need to study environmental science

## 30 ☐ Course Overview

- ✓ human impacts on the environment
- ✓ how do we address environmental problems?
- ✓ scientific analysis of environmental problems
  - scientific method

## 31 ☐ Course Overview

- ✓ matter & energy
  - structure of matter
  - atoms
  - elements
  - periodic table
  - molecules and compounds
  - chemical reactions

## 32 ☐ Course Overview

- ✓ matter & energy
  - types of energy
  - states of matter
  - laws of thermodynamics

## 33 ☐ Course Overview

- ✓ life
  - properties of life

- cell theory
- origin of life
- fueling life
  - photosynthesis
  - cellular respiration

#### 34 Course Overview

- ✓ life
  - levels of organization of life
    - cell
    - tissue
    - organ
    - organism
    - population
    - community
    - ecosystem

#### 35 Course Overview

- ✓ life
  - categorizing life
    - basics of taxonomy
  - kingdoms of life
    - major characteristics

#### 36 Course Overview

- ✓ physical environment
  - solar radiation
  - atmosphere
    - composition
    - circulation patterns
  - global oceans
    - circulation patterns
  - interaction of ocean with atmosphere
    - El Nino

#### 37 Course Overview

- ✓ physical environment
  - weather and climate
    - weather parameters
      - examples of severe weather
    - climate
      - factors that determine climate
        - » temperature
        - » precipitation
        - » climatic zones

#### 38 Course Overview

- ✓ physical environment
  - interplanetary processes
    - plate tectonics
    - volcanoes
    - earthquakes

39  **Course Overview**

- ✓ ecological concepts
  - organism interactions
- ✓ principles of population ecology
  - how populations change size
    - factors that affect population size
  - how populations change over time
    - natural selection
    - evolution

40  **Course Overview**

- ✓ human population
  - history of its growth
  - current size
    - factors contributing to accelerated growth
    - age structure & population pyramids
  - as an environmental problem
    - human population explosion
    - population, resources & the environment

41  **Course Overview**

- ✓ communities
  - biological communities
  - interactions among organisms
    - predation, symbiosis, competition
    - ecological niche
  - species diversity
  - community change over time
    - succession

42  **Course Overview**

- ✓ ecosystems
  - definition
  - flow of energy through ecosystems
    - trophic levels
      - producers, consumers, decomposers
    - ecological pyramids
- ✓ biogeochemical cycles
  - how chemical elements cycle



- major biogeochemical cycles

#### 43 Course Overview

- ✓ major biomes
  - tundra, taiga, temperate rain forest, temperate deciduous, forest, grasslands, chaparral, deserts, savanna, tropical rain forest
  - role of climate in determining biome
  - characteristics of each biome
- ✓ aquatic ecosystems

#### 44 Introduction to Environmental Science

- ✓ what this course **is**:
  - an environmental **science** course
- ✓ what this course **is not**:
  - an environmental **studies** course
  
- ✓ Chapter 1:
  - Environmental Interrelationships
    - The Field of Environmental Science

#### 45 The Field of Environmental Science

- ✓ Environmental Science
  - interdisciplinary
  - includes applied and theoretical aspects of human impact on world
  - incorporates scientific aspects with inputs from social sciences

#### 46 The Field of Environmental Science

- ✓ Environmental Science
  - what disciplines are incorporated?
    - **Participation**: list generated by students:

#### 47

#### 48 Interrelated Nature Environmental Problems

- ✓ what is meant by the term “environment”?
  - **Participation**: list generated by students:

#### 49 Interrelated Nature Environmental Problems

- ✓ what is meant by the term “environment”?
  - from French *environner*: to encircle or surround
  - definitions include
    - circumstances and conditions that surround an organism or group of organisms
    - the social and cultural conditions that affect an individual or community

#### 50 Interrelated Nature Environmental Problems

- ✓ **Environment** definition
  - everything that affects an organism during its lifetime.

51  **In-Class Activity: Environmental Knowledge Quiz**

- ✓ Think you're an environmental whiz?
  - according to a survey conducted by the National Environmental Education and Training Foundation and the polling firm Roper Starch Worldwide
    - most people are in the dark when it comes to environmental issues.

52  **In-Class Activity: Environmental Knowledge Quiz**

- ✓ According to the NEETF survey
  - adult Americans were reportedly able to answer an average of just 2.2 of 10 questions correctly
    - random guessing would have scored 2.5 correct.

53  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓ work independently
- ✓ on a sheet of paper write the following information
  - your name
  - # 1 - 10, for the 10 questions to be asked
  - letter representing answer to each question
- ✓ after answering questions
  - exchange papers with a neighbor
- ✓ as correct answers for the questions are displayed, correct papers and, as a class, discuss possible reasons for misconceptions
- ✓ submit all papers

54  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓ 1. What is generally agreed upon as being the greatest threat to our wildlife resources?
  - A. .pollution
  - B. global warming
  - C. .habitat loss
  - D. ozone depletion


55  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓ 2. What is the current population of the Earth?
  - A. 3 billion
  - B. 5 billion
  - C. 10 billion
  - D. 6 billion

56  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓ 3. Worldwide, most childhood deaths are caused by:
  - A. starvation

- B. car accidents
- C. water pollution

57  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓4. Which action can have the greatest impact on reducing the threat of global warming?
- A. recycling
  - B. reduced energy use
  - C. composting
  - D. planting a tree

58  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓5. Which form of household heating is generally considered most environmentally friendly?
- A. electric baseboard
  - B. coal
  - C. wood
  - D. natural gas

59  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓6. How much water does the average person living in the United States use in a day?
- A. 10 gallons
  - B. 20 gallons
  - C. 50 gallons
  - D. 100 gallons

60  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓7. Which produces more greenhouse gas pollution?
- A. the average home
  - B. the average car
  - C. either produce any

61  **In-Class Activity #2: Environmental Knowledge Quiz**

- ✓8. What is the main source of water pollution in the United States?
- A. oil spills
  - B. run off from farm fields, roads, parking lots, and lawns
  - C. sewage

62 ☐ **In-Class Activity #2: Environmental Knowledge Quiz**

✓9. What year did the former Soviet Union loft the first artificial satellite, Sputnik 1, into Earth orbit?

- A. 1945
- B. 1950
- C. 1957
- D. 1969

63 ☐ **In-Class Activity #2: Environmental Knowledge Quiz**

✓10. How much trash does the average person throw out annually?

- A. 500 pounds
- B. 1000 pounds
- C. 1500 pounds

64 ☐ **In-Class Activity #2: Environmental Knowledge Quiz**

✓exchange papers with a neighbor

✓correct neighbor's paper based on quiz answers at

– [www.enn.com](http://www.enn.com)

65 ☐

✓The end