1 **EVPP 110**
**"Ecosphere: Environmental Science I"**

Fall Semester 2002

GMU

Instructor: Dr. Kim Largen

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

2 Agenda 8/26/02

- ✓Introduction
- ✓Distribution & review of syllabus
  - administrative details
  - course overview
- ✓Intro to environmental science (ch. 1)

3 Introduction

- ✓Instructor: Dr. Kim Largen
  - Education
    - Undergraduate
      - BS - University of Virginia
        - » Double Major: Biology, Environmental Science
    - Graduate
      - MS Program - University of Georgia - Incomplete
        - » Plant Pathology
      - MS - George Mason University
        - » Environmental Biology
      - PhD - George Mason University
        - » Environmental Science and Public Policy

4 Introduction

- ✓Instructor : Dr. Kim Largen
  - Employment Experience - Non-Teaching
    - US Peace Corps (1982)
      - Agricultural Extension Agent
    - US Forest Service (summers during college)
      - Biological Aide - Forest Pathology
    - Prince William County (since 1983)
      - Gypsy Moth & Mosquito Control Branch Chief

5 Introduction

- ✓ Employment Experience - Teaching
  - NVCC (since 1991)
    - Biology 101 and 102 labs and lectures
  - GMU (fall 2001)

- Biology 103/104 lectures
- Environmental science 110/111 lecture & lab
- Plant taxonomy lab
- Ecology lab
- UMUC (spring 2002)
  - Global environmental change (on-line course)

## 6 Administrative Details

✓Facility
✓Class Format
✓Course Syllabus
- lecture
- laboratory

✓Preparing for Class
✓Course Overview

## 7 Administrative Details

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

## 8 Administrative Details

✓Class Format
- Time
  - MW 9:00am-10:15am
    - full class period, no break
  - Labs, either Thur or Fri
- Agenda
  - Lecture
    - mostly lecture
    - answer a few questions

## 9 Administrative Details

✓EVPP 110 websites
- instructor's website
  - http://mason.gmu.edu/~klargen
- course website
  - http://mason.gmu.edu/~rcjones/110home.htm
- will contain same information
  - or will be linked
- will contain syllabus, study guide, practice questions, etc.

– will be used as needed to distribute additional information

## 10 Administrative Details

✓Class Conduct Expectations

– Conduct that interferes with students' or instructor's ability to hear and focus on lecture cannot be tolerated
  - arrive on time
  - stay until end of class
  - if arriving late or leaving early, minimize the disruption you cause
  - turn off cell phones and pagers
  - no audible use of cell phones or music players
  - no conversations with fellow students

## 11 Course Syllabus

✓Course goals

– designed as a two-semester lab science sequence

– fulfills the general education requirements for B.A. students in the College of Arts and Science and other schools and colleges

– EVPP 110 is the first semester of the sequence, EVPP 111 is second semester

## 12 Course Syllabus

✓Course goals

– will study the components and interactions that make up the natural systems of our home planet, earth

– with particular attention to the part of the Earth that is home to humans and other life forms

## 13 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

## 14 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

## 15 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

## 16 Course Syllabus

✓ Course Instructors
- Dr. Kim Largen
  - teaching lecture, lab section 202
  - DK 3036
  - 703-993--1033
  - klargen@gmu.edu
- Danielle Derwin
  - graduate assistant
  - teaching lab sections 201, 203, 204
  - contact info will be presented in lab

## 17 Course Syllabus

✓ Textbooks and Supplies
- Lecture
  - *Environment,* 3rd Edition, by Raven & Berg
- Laboratory
  - *EVPP 110 Lab Manual,* copied packet available in bookstore for purchase
  - if not ready prior to first lab, individual exercises will be distributed in lab

## 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 = 400 possible points
  - 75% from lecture (300 points)
  - 25% from lab (100 points)

## 20 Course Syllabus

✓ Grading

- Lecture grade = 300 points
  - based entirely on exams
    - three exams worth 100 points each
      - » multiple choice, fill-in-the-blank, true/false, matching, short answer
    - the third exam is giving during time schedule for “final”
      - » but it is just non-cumulative third exam

## 21 Course Syllabus

✓Grading

- Laboratory grade = 100 points
  - based on
    - weekly lab write-ups/assignments
    - current issue project/presentation
  - lab instructor will address details

## 22 Course Syllabus

✓Grading

- Scale
  - 10 percent grading scale will be used
  - if the college dictates the use of the + and - system, it will be implemented
    - and described in detail on website

## 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 exams and quizzes are considered violations of the Honor Code

## 25 Course Syllabus

✓ Lecture Schedule (syllabus page 3)

- provides topics to be covered each week and the 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
  - 9/30 - exam 1
  - 11/4 - exam 2
  - 12/16 - exam 3

## 26 Course Syllabus

✓Laboratory syllabus
- **Lab schedule**
  - Labs begin week of 8/26
    - Thur, 1:30pm, Instructor - Largen
    - Thur, 4:30pm, Instructor - Derwin
    - Fri, 10:30am, Instructor - Derwin
    - Fri, 1:30pm, Instructor - Derwin
  - must take lab and lecture

## 27 Administrative Details

✓Course Syllabus
- Course Schedule
  - Class meets
    - 8/26 through 12/4
    - Non-Instructional Days
      - » 9/2 - Labor Day
      - » 10/14 - Fall Break (Columbus Day)
      - » 11/27 - Thanksgiving (Wednesday)
    - **NOTE: Mon classes meet on Tue 10/15**

## 28 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
- ask for help when needed

## 29 Administrative Details

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

## 30 Administrative Details

✓ Course Overview
- What is environmental science?
  - interdisciplinary nature of this science
  - why we need to study environmental science
- human impacts on the environment
- goals of environmental science
- How do we address environmental problems?

- scientific analysis of environmental problems
  - scientific method

## 31 Administrative Details

✓Course Overview

✓Matter & energy

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

## 32 Administrative Details

✓Course Overview

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

## 33 Administrative Details

✓Course Overview

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

## 34 Administrative Details

✓Course Overview

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

## 35 Administrative Details

✓Course Overview

- life
  - categorizing life
    - basics of taxonomy

- kingdoms of life
  - major characteristics

## 36 Administrative Details

✓Course Overview
- physical environment
- solar radiation
- atmosphere
  - composition of the layers
  - circulation patterns
- global ocean
  - circulation patterns
- interaction of ocean with atmosphere
  - El Nino

## 37 Administrative Details

✓Course Overview
- weather and climate
- weather parameters
  - examples of sever weather
- climate
  - factors that determine climate
    - temperature
    - precipitation
    - climatic zones

## 38 Administrative Details

✓Course Overview
- interplanetary processes
  - plate tectonics
  - volcanoes
  - earthquakes

✓biogeochemical cycles
  - how chemical elements cycle
  - major biogeochemical cycles
    - carbon , nitrogen, phosphorous, hydrologic cycle

## 39 Administrative Details

✓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

## 40 Administrative Details

✓Course Overview
- Principles of population ecology
  - how populations change size
    - factors that affect population size
      - » density-dependent factors
      - » density-independent factors
  - how populations change over time
    - natural selection
    - evolution

## 41 Administrative Details

✓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

## 42 Administrative Details

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

## 43 Administrative Details

✓Course Overview
- Ecosystems
  - definition
  - flow of energy through ecosystems
    - trophic levels
      - » producers, consumers, decomposers
    - ecological pyramids
- examples of major ecosystems (to be revisited in detail in EVPP 111)

## 44 Administrative Details

✓Course Overview

– Energy sources  and consumption
  - fossil fuels
  - nuclear energy
  - renewable energy & conservation