1 **EVPP 111**
"Ecosphere: Environmental Science II"

Spring Semester 2004
GMU
Instructor: Dr. Kim Largen

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

2 Administrative Introduction and Human Population - Introduction

3 Agenda 1/21/04

- Introductions
- Course administrative details
- Distribution & review of lecture syllabus
- In-class activity #1
- Distribution and review of lab syllabus
- In-class activity #2
- Human Population - Introduction

4 Introductions

- Course Instructors
  - Lecture
    - Dr. Kim Largen
      - Office: David King (DK) Hall, Room 3047
        - » M & W: 8:15am-8:45am & 10:30am-11:00am, others posted on website
      - Phone: 703-993-1033
      - Mailbox: DK Room 3042-3043
      - email: klargen@gmu.edu
      - background

5 Introductions

- Course Instructors
  - Lab
    - graduate teaching assistants
      - Hari Dulal (W 10:30am, F 10:30am, F 1:30pm)
      - Carolyn Langdon (W 1:30pm)
      - Jennifer Cordrey (R 10:30am)
      - Ryan Albert(R 1:30pm)

- contact info will be presented in lab

6 Administrative Details

- Facility
- Class Format
- Website
- Class conduct
- Course goals
- Texts
- Cancelled class
- Honor Code
- Preparing for class

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 W, R, F
  - Agenda
    - Lecture
      - lecture
      - discussion
      - in-class activities/assignments

9 Administrative Details

- EVPP 111 website
  - http://mason.gmu.edu/~klargen
    - syllabus, lecture outlines, study guides, etc.
    - distribution of additional information

10 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

11 Administrative Details

- 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

12 Administrative Details

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

13 Administrative Details

- 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 Administrative Details

- 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 Administrative Details

- 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 Administrative Details

- 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
    - instructor handouts
    - *EVPP 111 Lab Manual*
    - student printouts from website

17 Administrative Details

- 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

18 Administrative Details

- 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

19 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!***

20 Administrative Details

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

- exam strategies

21 Lecture Syllabus

- Changes
  - no make-up exams
  - optional cumulative final exam

22 In-Class Activity #1: How Many Humans Can the Earth Support?

- **In groups of 3-5, discuss and answer the following questions:**
  - What is the current population of the Earth?
  - Do you think there is a limit to the number of people the Earth can support (a carrying capacity), and why or why not?
  - What do think is the carrying capacity of the Earth?

23 Lab Syllabus

- Changes
  - Penalties for
    - Missed labs
    - Tardiness
    - Disruptive behavior
    - Late lab write-ups
  - Pop quizzes

24 In-Class Activity #2: Population Quiz

- 1. What is the most populous country on the planet?
  - A. India
  - B. Brazil
  - C. China
  - D. Indonesia

25 In-Class Activity #2: Population Quiz

- 2. What country has the world's highest level of "consumption overpopulation" ?
  - A. USA
  - B. England
  - C. China
  - D. Indonesia

26 In-Class Activity #2: Population Quiz

- 3. What percent of the world's population lives in an urban setting?

- A. 15 percent
- B. 25 percent
- C. 45 percent
- D. 65 percent

27 In-Class Activity #2: Population Quiz

- 4. Will the United States population stabilize?
  - A. Yes
  - B. No

28 In-Class Activity #2: Population Quiz

- 5. What percentage of the world's population faces chronic water shortages?
  - A. 2 percent
  - B. 8 percent
  - C. 12 percent
  - D. 22 percent

29 In-Class Activity #2: Population Quiz

- 6. Africa's population grows by how many people every three weeks?
  - A. 20,000
  - B. 50,000
  - C. 1 million
  - D. 5 million

30 In-Class Activity #2: Population Quiz

- 7. When is the world's population expected to double?
  - A. 28 years
  - B. 49 years
  - C. 63 years
  - D. 92 years

31 In-Class Activity #2: Population Quiz

- 8. Which nation contains the greatest number of refugees?
  - A. Russia
  - B. US

- C. Congo
- D. Iran

32 In-Class Activity #2: Population Quiz

- 9. The United Nations proposes what steps to stabilize the age distribution of the European Union, Japan and South Korea?
  - A. Migration
  - B. Deportation
  - C. Mandatory family planning
  - D. Interstellar colonization

33 In-Class Activity #2: Population Quiz

- 10. What is Earth's capacity for human population?
  - A. 1 billion
  - B. 5 billion
  - C. 8 billion
  - D. 50 billion

34 Human Population - Introduction

- In his "Essay on the Principle of Population" an economist and philosopher noted
  - "The perpetual tendency in the race of man to increase beyond the means of subsistence is one of the general laws of animated nature which we can have no reason to expect will change."

35 Human Population - Introduction

- He concluded that
  - should man struggle against his expanding population, he would "be perpetually crushed by the recoil of this rock of Sisyphus"

36 Human Population - Introduction

- His critics pointed out that, though the world's population is increasing
  - the rate of population growth is slowing
    - despite a declining infant mortality rate and an increasing average life span

37 Human Population - Introduction

- Who was this economist/philosopher and when was his essay published?

38 Human Population - Introduction

- In 1798, the economist and philosopher Thomas Malthus addressed the issue of human population growth in "Essay on the Principle of Population"

39 Human Population - Introduction

- Some contemporary theorists hold that there is no population problem
- Julian Simon argues
  - "Our world now supports 5.5 billion people. In the 19th century the Earth could sustain only 1 billion. And 10,000 years ago, only 1 million people could keep themselves alive. People are living more healthily than ever before, too."

40 Human Population - Introduction

- Some contemporary theorists hold that there is no population problem
  - believing human technology and ingenuity will enable us to continually develop solutions to the “population problem” and expand the carrying capacity of the Earth indefinitely

41 Human Population - Introduction

- Other contemporary theorists disagree
  - Garrett Hardin, 1968, "The Tragedy of the Commons"
    - “There has developed in the contemporary natural sciences a recognition that there is a subset of problems such as population, atomic war and environmental corruption, for which there are no technical solutions."

42 Human Population - Introduction

- The issue of world population has many points of view and few certainties
  - we will explore some issues related to human population and the impact on environment

43 The End