

**Ecology 0334471**

**Biology 321, 9-10 Sun. Tue.**

**Spring 2012**

**Dr. said damhoureyeh**

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The course will be in lecture format, the field trips and lab work throughout the semester will help in further explanation and clarification of the main concepts of the course. This course will provide a basic knowledge about the different aspects of ecology (ecosystem, population and community ecology)

### **LECTURES**

#### **Introduction**

*Ecosystem Ecology, GET TO KNOW THE ECOSYSTEM STRUCTURE AND FUNCTION AND THE BASIC PROCESSES OCCURRING IN ECOSYSTEMS*

..... (10 Lectures)

#### **CONCEPT**

- **Components of ecosystems**
  - Structure**
    - Biotic and Abiotic factors
  - Function**
    - Energy Flow
    - Nutrient cycling
- **Ecosystems properties**
  - Stability (resistance and resilience)
- **Essential Processes within ecosystems**
  - Photosynthesis
  - Decomposition
- **Energy Flow within ecosystems**
  - Food webs and chains
  - Ecological Pyramids
- **Biogeochemical Cycles**

*Population Ecology, GET TO KNOW THE CONCEPT OF POPULATION, ITS STRUCTURE AND THE ASSOCIATED PROPERTIES..... (10 Lectures)*

- **Definition**
- **Genetic Variation within populations**
  - Types of genetic variation
    - Continuous and Discontinuous
  - Sources of genetic variations
- **Population Dynamics and Regulation**
  - Density and Dispersion
  - Mortality, Life tables, and Survivorship curves
  - Natality and Growth rates
    - Growth Patterns
    - Carrying Capacity
  - Age structure and Sex ratio
- **Life History Patterns**
  - r-selected vs. k-selected strategies
  - Competition and the Niche Concept
  - Definition and types

**Midterm Exam (8/ April/ 2012)**

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*Multi-species Communities, GET TO KNOW THE COMMUNITY STRUCTURE AND ITS ASSOCIATED PROPERTIES (10 Lectures)*

- **Definition**
- **Structure of communities**
  - Physical structure
    - Vertical stratification
    - Horizontal stratification
      - Edges and ecotones
  - Biological structure
    - Dominance
    - Abundance
    - Diversity
- **Ecological Succession**
  - Definition and Types
  - Patterns of Succession

**FINAL EXAM (TBD)**

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## PRACTICAL PART OF THE COURSE

Lab meetings will include topics outlined in the lab manual provided. In addition, field trips are necessary to introduce the different biogeographical areas of Jordan.

**Samples collected during field trips will be analyzed during the Lab periods.**

The lab will provide the basic techniques to enable you to start a general ecological survey mainly focusing on vegetation sampling.

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### TOPICS

**Introduction to the practical ecology ..... Lab. 1**

*The following lab experiments will be used to analyze samples collected from the field trips after lab no. 6.*

**- Soil Analysis**

**Physical analysis ..... Lab. 2**

Granulometry  
Gaseous volume  
Permeability  
Capillarity

**Chemical analysis ..... Lab. 3**

Qualitative  
Nitrate and Nitrite  
Calcium  
Magnesium  
Quantitative  
Organic matter (percent organic carbon)

**- Ecological surveys**

Vegetation sampling

**Quadrat Method ..... Lab. 4**

**Line transect method ..... Lab. 5**

**- Ecology of Jordan**

Introduction to Field Trips ..... Lab 6

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**Field trips that will cover the different biogeographical areas of Jordan**

**Lab reports are due after 2 weeks from each trip.**

- 1) Naur, Adasseyah and Dead Sea area ..... Date 31 of March
- 2) Azraq and the eastern desert (including wild life reserves ..... Date 14 of April
- 3) Ajloun area (Oak forest) ..... Date 28 of April

**References:**

- 1) Vegetation of Jordan, by Dr. D. Al-Eisawi. The paper will be supplied with the lab manual
- 2) Jordan country study on biological diversity, by General Corporation for the Environment Protection (GCEP). 1998 ..... (at MoE)

**Grade Distribution**

30 % midterm Exam  
20% Reports and Field trips  
50 % Final (35 % Theory + 15 % Lab)