

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

**ACADEMIC AFFAIRS**

Course Number: BIOL-213 Department: Biological Sciences  
 Course Title: Fund. Environmental Biology II Semester: Spring Year: 2008

**Objectives/Competencies**

Course Objective	Competencies
<ol style="list-style-type: none"> <li>1. Understand the different types of value that humans assign to biological diversity</li> <li>2. Discuss current estimates of the numbers of species inhabiting earth.</li> <li>3. Discussion of habitat loss.</li> </ol>	<ol style="list-style-type: none"> <li>1. Describe and provide examples of Direct, Indirect, Aesthetic, and the Optional Values of biological diversity.</li> <li>1. Understand strengths and weaknesses of each species estimate.</li> <li>2. Understand methods used to make species projections.</li> <li>3. Explain the distribution of biological diversity across the planet with regard to the major biomes.</li> <li>4. Discuss how and why species diversity has changed during the past 500 years.</li> <li>1. Define habitat loss.</li> <li>2. List major causes of habitat loss.</li> <li>3. Identify areas of earth where habitat loss is most rapid and discuss reasons for the losses.</li> </ol>

Course Objective	Competencies
<p>4. Discussion of habitat degradation.</p>	<p>4. Understand the impacts of habitat loss on biological diversity.</p> <p>1. Define habitat degradation.                  2. List major causes of habitat degradation.                  3. Identify areas of earth where habitat degradation is most rapid.                  4. Understand the impacts of habitat degradation on biological diversity.</p>
<p>5. Discussion of habitat fragmentation.</p>	<p>1. Define habitat fragmentation.                  2. List major causes of habitat fragmentation.                  3. Describe core vs. edge habitat                  4. Identify areas of earth where habitat fragmentation is most rapid.                  5. Understand the impacts of habitat fragmentation on biological diversity.                  6. Discuss how fragment size impacts biological diversity in the fragment.</p>
<p>6. Learn about invasive species.</p>	<p>1. Differentiate between native and invasive species.                  2. List methods by which invasive species colonize new regions.                  3. Understand why invasive species out compete native species.</p>

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	<ol style="list-style-type: none"> <li>4. Describe some of the detrimental effects of invasive species on native species.</li> <li>5. Discuss 20 invasive species found in Massachusetts.</li> <li>6. Discuss why it is so difficult to control invasive species once they become established.</li> </ol>
<p>7. Discuss the over-exploitation of species.</p>	<ol style="list-style-type: none"> <li>1. Describe what constitutes over-exploitation.</li> <li>2. Understand why species are over-exploited.</li> <li>3. List species that are most vulnerable to exploitation.</li> <li>4. Describe international efforts to curb over-exploitation of species.</li> </ol>
<p>8. The History of Biological Conservation</p>	<ol style="list-style-type: none"> <li>1. Discuss some of the early pioneers of the conservation movement and their contributions.</li> </ol>
<p>9. Study conservation laws and legislation 1900-1970.</p>	<ol style="list-style-type: none"> <li>1. Lacey Act (1900)</li> <li>2. The Migratory Bird Treaty Act (1916)</li> <li>3. The Migratory Bird Conservation Act (1929)</li> <li>4. Migratory Bird Hunting Stamp Act (1934)</li> <li>5. Pittman-Robertson Act (1937)</li> <li>6. Dingell-Johnson Act (1939)</li> <li>7. Fish and Wildlife Act (1956)</li> <li>8. Wilderness Act (1964)</li> </ol>

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<p>10. Study conservation laws and legislation 1970-1970.</p>	<ol style="list-style-type: none"> <li>1. Clean Water Act (1970)</li> <li>2. Marine Mammal Protection Act (1972)</li> <li>3. Clean Water Act (1972)</li> <li>4. Endangered Species Act (1973)</li> <li>5. Safe Water Drinking Act (1974)</li> <li>6. CITES (1975)</li> <li>7. National Environmental Policy Act (1976)</li> <li>8. Arctic Conservation Act (1978)</li> <li>9. National Invasive Species Control Act (1996)</li> </ol>
<p>11. National Parks, Forests, and Wildlife Refuges</p>	<ol style="list-style-type: none"> <li>1. Explain differences between national parks, forests, and wildlife refuges.</li> <li>2. Discuss early history of parks and their establishment.</li> <li>3. Understand mission of parks, forests, and wildlife refuges.</li> </ol>
<p>12. Basic principles of reserve design.</p>	<ol style="list-style-type: none"> <li>1. Discuss fundamentals of reserve design, including buffer zones, core areas, and sustainable reserves.</li> <li>2. Discuss the coarse filter vs. fine-filter approach to conservation.</li> <li>3. Differentiate between line corridors and strip corridors.</li> <li>4. Understand how habitat fragmentation impacts reserve continuity.</li> </ol> <ol style="list-style-type: none"> <li>1. Differentiate between in situ and ex situ preservation.</li> <li>2. List 3 major goals of zoos, and aquaria.</li> </ol>

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<p>13. The role of Zoos, botanical gardens and aquaria in conservation.</p>	<ol style="list-style-type: none"> <li>3. Understand limitations of captive breeding.</li> <li>4. Discuss the role of seed banks in conservation.</li> <li>5. Discuss the role of botanical gardens and arboreta in plant conservation.</li> <li>6. Understand the importance of protecting the genetic diversity of crop species.</li> <li>7. Study species reintroduction programs.</li> </ol>
<p>14. Future Goals of Conservation.</p>	<ol style="list-style-type: none"> <li>1. List and discuss 6 major actions needed to protect the earth's biological diversity.</li> <li>2. List 20 actions that the average citizen of the United States could perform to help curb resource use, reduce pollution, and make the earth a better place to live for future generations.</li> </ol>