EVR 7322  METHODS IN SUSTAINABLE RESOURCE MANAGEMENT

FALL 2019

Instructor: Dr. Mahadev G. Bhat  Class Room: FIU I-75 Room 426A
Office      AHC5-375        Class Hours: Wed 6:00 - 8:45 PM
Phone: (305) 348-1210  Office Hours: On appointment
Email: bhatm@fiu.edu

Course Description:

The word ‘sustainability’ has become a defining theme for public agencies, private businesses, and individual citizens and communities that attempt to achieve environmental sustainability, social equity and economic growth. How do we know we are on the right course toward a sustainable development? How do we incorporate sustainability principles into program planning, appraisal, implementation and assessment? In this course, students will explore some of the popular tools and frameworks for assessing the sustainability of public programs and private consumption, production and business decisions.

Course Outline

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic and Readings</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Introduction</td>
</tr>
<tr>
<td>Aug 28</td>
<td>Review of SD History, Concepts, Approaches and Principles</td>
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<td></td>
<td>History of Sustainable Development</td>
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<td>Definitions, concepts, and principles of sustainability</td>
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<td>Disciplinary approaches to sustainability</td>
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<td>Readings</td>
<td>Goodland. “The Concept of Environmental Sustainability”</td>
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<td></td>
<td>Manderson. “A systems Based Framework to Examine Multicontetural Application of the Sustainability Concept.”</td>
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<td>Quental et al. “Sustainability: Characteristics and Scientific Roots.”</td>
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<td></td>
<td>Lecture notes</td>
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| Week 2   | Tools of Sustainability Assessment |
| Sept 4   | Reading: |
|          | Singh et al. “An overview of sustainability assessment methodologies.” Ecological |
Indicators. Vol. 9(2009), 189–212.

Ecosystem Services Assessment

Reading:

Available on: https://nespguidebook.com/

(i) Watch the Introductory Video  
(ii) Click on, and read, “Why Ecosystem Services” on the top Menu  
(iii) Click on “Assessment Framework” on the top Menu and read the following sections which you find on the right hand side menu: 
  ■ Overview and Best Practices  
  ■ Scoping  
  ■ Benefit-Relevant Indicators (BRIs)  
  ■ Analysis section  
  ■ Decision Process  

Note the above reading includes several smaller articles. The lecture notes will help you identify the important topics to focus while reading these articles.

Lecture notes

Assignment 1: Conduct a review of one of the “Agency Examples” Ecosystem Services case studies provided on the above FRMES website. Your review will be based on a set of review questions provided in this assignment instructions (roughly 3 pages long double space, not including diagrams, tables, and charts) -- due in two weeks (Sept 18);
Submit via Canvas Message

<table>
<thead>
<tr>
<th>Week 3</th>
<th>Sept 11 (Wed)</th>
<th>Valuation of Ecosystem Services</th>
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<td></td>
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<td>■ Indirect or Revealed preference methods</td>
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Reading: Indirect methods from EcosystemValuation.Org (to be posted)


Example survey instruments

Lecture notes

<table>
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<tr>
<th>Week 4</th>
<th>Sept 18 (Wed)</th>
<th>Valuation of Ecosystem Services:</th>
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<tr>
<td></td>
<td></td>
<td>Reading: Contingent Valuation from EcosystemValuation.Org</td>
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Example survey instruments

Lecture notes

**Assignment 1 due before the class**

**Week 5**  
**Sept 25 (Wed)**  
Benefit-cost analysis (guest lecture)

**Reading:** Transportation Research Board. “Transportation Benefit-Cost Analysis.” Available at [http://bca.transportationeconomics.org/home](http://bca.transportationeconomics.org/home)


**Assignment 2:**

(i) Begin with an **in-class** Group Project Discussion. Each group of students will:

- Choose an Ecosystem (wetland, forest, rangeland, agro-eco, etc.)
- Identify as many ecosystem services that you want to assess, following the example of ES Assessment Framework developed in Assignment 1
- Plan for conducting at least one survey using one of the valuation techniques discussed in class
- Plan for literature review and collection of other secondary data necessary to conduct the ES assessment and/or eventually a cost-benefit analysis, which will be part of a later assignment.

(ii) Take-home Continuation of Assignment 2 (group assignment)

- Part 1: Develop the **survey instrument** for gathering primary data for estimating the economic value of a selected ecosystem service of a local natural resource system
- Part 2: A **one page plan** for gathering secondary data on other ES relating to the Ecosystem that you have chosen in class as a group.

**Week 6**  
**Oct 2 (Wed)**  
**Mid-term exam (take home)**

**Week 7**  
**Oct 9 (Wed)**  
Benefit-cost analysis, contd.

Assignment 2 (Part 1 & 2) due before the class time via Canvas Message.
### Assignment 3: Homework on benefit-cost analysis (due in two weeks)

#### Week 8  
**Oct 16 (Wed)**
- Sustainability Indicators & Pressure, State and Response framework
- Reading: TBA
- ES valuation project in-class help if needed

**Assignment 4**

I will have returned your Assignment 2 (i.e., survey and data collection plan) with my corrections by this time. Start data collection using the survey instrument you have developed. (Note: before you implement the survey, your instrument must be reviewed and approved by me).

You will not submit this as a separate assignment, but the results from it will be reported as part of Assignment 5.

#### Week 9  
**Oct 23 (Wed)**
- Life Cycle Analysis
  [http://www.istc.illinois.edu/info/library_docs/tr/tr40.pdf](http://www.istc.illinois.edu/info/library_docs/tr/tr40.pdf)

**Reading:**

**Assignment 3 on Benefit-Cost analysis due**

#### Week 10  
**Oct 30 (Wed)**
- Tabulation of the Primary data from Assignment 4 and estimation of valuation models in class
- If you have not completed the survey by now, I may do the tabulation exercise in the next class and do next week’s lecture here

#### Week 11  
**Nov 6 (Wed)**
- Corporate Social Responsibility & Sustainability; Global Reporting Initiative
- Reading: TBA

#### Week 12  
**Nov 13 (Wed)**
- Checking back on your ES valuation assignment and in class help
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Week 13</td>
<td>Nov 20 (Wed)</td>
<td>A field visit (potential)</td>
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<td>Week 14</td>
<td>Nov 27 (Wed)</td>
<td>TBA</td>
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<tr>
<td>Week 15</td>
<td>Dec 4</td>
<td><strong>Assignment 5</strong>: Group Presentation of your ecosystem service assessment study. Group paper on the ES valuation (group paper) is due the same day (this is a continuation of your Assignment 2 and 4)</td>
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<tr>
<td>Week 16</td>
<td>Dec 11</td>
<td><strong>Final Exam (take home)</strong></td>
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Instructor reserves the right to change class schedule and readings as needed.

**Grading:**

Class grades will be decided on the basis of exams (30%), assignments problems (60%), and class participation (10%).