THE GEORGE WASHINGTON UNIVERSITY
Department of Economics
Economics of the Environment and Natural Resources, ECON 6237
1957 E St., Room B 17
Fall 2016, Thursday, 7:10-9:00 pm

PROFESSOR: Benjamin Simon
Office Hours: by appointment.
Phone: 208-4916.
Email address: bsimon@gwu.edu

COURSE DESCRIPTION. The course will apply the tools of microeconomic theory to analyze a variety of environmental and natural resource problems. Knowledge of microeconomic theory at the intermediate, undergraduate level (e.g., PPPA 6017) is essential for the course. Problems will be analyzed using a combination of graphical and mathematical techniques as well as classroom exercises. Although calculus is not required, some concepts from calculus will be employed; these will be explained in class and in handouts as appropriate.

REQUIREMENTS AND GRADING.

Memo Assignments. Approximately three assignments will be posted over the term and you must complete TWO of the three. If you complete more than two, your top two grades will be counted. For these assignments, the deliverable is a 1-2 page memo (typed, single spaced, 12 point font, 1 inch margins) to your policy-maker boss and a short appendix (no more than 3 pages) with additional details, if appropriate. Upload a pdf of your entire assignment to Blackboard. Please make sure your name is in the filename of the file you upload. These projects are an important part of the course (as reflected in their contribution to your final grade). I expect to see high quality, polished, professional work.

Writing quality counts! Be sure to format the memo up with appropriate "To," "From," "Date," and "Subject" headings. Any bibliographic references must use a standard format (however, keep in mind that most policy memos are not academic, in the sense that they do not typically include extensive footnotes and references). Wikipedia, popular magazines, and newspapers are not appropriate sources of information for the memos. If you choose, you may work in a team of two on your assignments but you cannot keep the same partner for more than one assignment from the instructor prior to the deadline will be limited to answering pointed questions. Do not expect to be led through the process of doing the project.

Math/Excel Assignments. One math review and 5 assignments using Excel (or statistical software of your choosing) are required. The math assignment is designed to review relevant math concepts. The excel assignments and datasets will be posted on Blackboard in the “projects” area. These assignments may be done in groups of 3 or less.

Article summaries. You must select at least one article from each topic on the syllabus (this does not include the textbook readings) and prepare a short (1 page) summary of the key points; no article summaries will be required for topics I and II. Note that some of these assignments require a one page summary of two articles (i.e., one page per article). There are 10 topics on the syllabus. To ensure coverage of the articles I may assign some of the articles. The articles will be discussed during one (or more) class meetings for each major topic covered. The summary you prepare must be posted to
Blackboard prior to the articles being discussed in class. Article summaries will be graded on a check-plus (A), check (A-), and check-minus (B+) system.

**Homework.** Five optional homework sets will be assigned over the course of the semester. Homework assignments will not be collected or graded. These assignments are designed primarily to illustrate relevant concepts covered in lecture and in the text. Answer sheets will be posted on Blackboard about a week after the assignment is made available.

**Turning in assignments.** Assignments should be uploaded to Bb or turned in at the beginning of class on the due date.

**Submission of Written Work Products Outside of the Classroom.** It is your responsibility to ensure that I receive your assignment on time. It is not permissible to submit assignments on the digital dropbox of Blackboard unless I tell you so.

**Collaboration on Assignments.** You are welcome to work in groups; however, you are expected to write up your answers individually.

**Late work will not be graded** (unless an exception has been granted prior to the due date).

**Tests.** There is a midterm and a final exam. The midterm exam will be a take home. The time and place of the final exam will be announced later in the semester.

**Class participation.** Classroom participation is strongly encouraged.

**Grading.** The course grade will be calculated using the following weights: midterm exam -- 20%; final exam -- 25%; memo assignments -- 15%; math and Excel assignments -- 30%; article summaries -- 5%; and class participation -- 5% (I expect that you will come to class having read the assigned readings and prepared to engage with me and other students in discussing the material we are covering; class participation is more than just attendance).

**Graphing.** I highly recommend Desmos ([https://www.desmos.com/calculator](https://www.desmos.com/calculator)) for graphing equations. While not a substitute for your ability to draw graphs by yourself or for using Excel, it is a highly useful tool for checking your work and understanding how changes in an equation change the graph.

**Late or Missed Class.** If you are late or absent from class, it is your responsibility to obtain all announcements, assignments, and handouts from Blackboard or from your classmates.

**Exam Dates.** Please notify me in the first two weeks of class if you are aware of a pre-existing conflict, such as a religious holiday you observe, that will preclude you from taking either the midterm or final at the assigned time. To the extent possible, we will work together to reschedule the exam as close to the original date as possible.

**Incompletes.** You must consult with me to obtain an incomplete no later than the last day of classes in the semester. At that time, we will both sign the CCAS contract for incompletes and submit a copy to the School Director.
Changing Grades After Completion of Course. No changes can be made in grades after the conclusion of the semester, other than in cases of clerical error.

Accommodation for Students with Disabilities. If you need extra time on exams or assignments due to a disability, let me know in the first week of class. In order to receive accommodations on the basis of disability, you'll need to provide proper documentation to the Office of Disability Support Services, Marvin Center 436, 202-994-8250. Accommodations will be made based upon the recommendations of the DSS Office.

University Counseling Center. The University Counseling Center (UCC), 202-994-5300, offers 24/7 assistance and referral to address students’ personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations; confidential assessment, counseling services (individual and small group), and referrals

Religious Holidays. If you need to miss a class to observe a religious holiday, please notify me the first week of classes about any conflict; we will arrange an absence without penalty.

Academic Integrity. The George Washington University is guided by the standards of academic integrity. Students are reminded to honor the Code of Academic Integrity, which can be viewed at:
http://www.gwu.edu/~ntegrity/code.html
If you are not familiar with the Code, you should read through it carefully.
### Summary of Topics and Assignment Due Dates

<table>
<thead>
<tr>
<th>Due Date</th>
<th>Topic</th>
<th>Article Summary</th>
<th>Math/Excel (you must do all)</th>
<th>Memo (choose 2)</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/1</td>
<td>Topic I – welfare econ</td>
<td></td>
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<tr>
<td>9/8</td>
<td>Topic II – on your own; Topic III – property rights/mkt failure</td>
<td>√ - one article from Topic III</td>
<td>Math review</td>
<td></td>
<td></td>
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<tr>
<td>9/8</td>
<td>Topic III – property rights/mkt failure</td>
<td></td>
<td></td>
<td>Excel 1 – supply and demand</td>
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<tr>
<td>9/15</td>
<td>Topic IV – govt failure</td>
<td>√ - one article</td>
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<tr>
<td>9/22</td>
<td>Topic V – instruments for pollution control</td>
<td></td>
<td></td>
<td>Excel 2 – Negative externalities</td>
<td></td>
</tr>
<tr>
<td>9/29</td>
<td>Topic V – instruments for pollution control</td>
<td>√ - two articles</td>
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<td>Memo 1</td>
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<tr>
<td>10/6</td>
<td>Topic VI – benefit cost analysis</td>
<td></td>
<td></td>
<td>Excel 3 – M&amp;I water demand</td>
<td></td>
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<tr>
<td>10/13</td>
<td>Topic VI – benefit cost analysis</td>
<td>√ - two articles</td>
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<td>Mid-term</td>
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<tr>
<td>10/20</td>
<td>Topic VI – benefit cost analysis</td>
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<td>Memo 2 Flint Michigan Water pollution</td>
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<tr>
<td>10/27</td>
<td>Topic VII – ecosystem services</td>
<td>√ one article</td>
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<tr>
<td>11/3</td>
<td>Topic VIII – exhaustible resources</td>
<td>√ - one article</td>
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<tr>
<td>11/17</td>
<td>Topic VIII – exhaustible resources</td>
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<td>Excel 4 – Benefit transfer</td>
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<tr>
<td>12/1</td>
<td>Topic IX – renewable resources</td>
<td>√ - one article</td>
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<td>Memo 3 Petroglyphs</td>
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<tr>
<td>12/8</td>
<td>Topic X – climate change</td>
<td>√ - two articles</td>
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<td>Excel 5 – Exhaustible resources</td>
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<tr>
<td>12/13</td>
<td>Make up/extra class/review</td>
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<tr>
<td>12/?</td>
<td>Make up/extra class/review</td>
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<td></td>
<td>Final Exam</td>
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**TEXTBOOKS and READINGS.**
Readings are divided into two categories: required and optional. All required readings will be on available via Blackboard's electronic reserves, but only some optional readings will be on Blackboard. Students will be expected to have completed the readings before the class for the relevant topic related to the reading.

- Optional readings are marked with a single asterisk (*).

**TOPICS**

I. **Review of Welfare Economics (1 class)**

1. AR, Chapter 5.
2. Ward, Chapter 2.

II. **Integrating the Environment and Natural Resources in Models of the Economy (cover this topic on your own)**

1. Pearce and Turner, Chapters 1 and 2 (on Bb).

III. **Property Rights and Market Failures (2-3 classes)**

1. Ward, pp. 79-86.

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IV. Government Failures (1 class)


V. Choice of Policy Instruments for Controlling Pollution (2-3 classes)

1. Ward, Chapter 16.
VI. Benefit-Cost Analysis (2 classes)

1. Ward, Chapters 5, 6, 7.
7. Stated Preference readings:

VII. Ecosystem Services, Biodiversity (1 class)


VIII. **Exhaustible Resources and Scarcity (1 class)**


IX. **Renewable Resources: Water and Forests (2 classes)**

1. Ward, Chapters 8, 10.


X. Climate Change (1-2 classes)

1. Ward, Chapter 15.
3. Social cost of carbon readings: