Sustainability and Economic Policy  
Syllabus  
Michail Fragkias*  
December 13, 2017

1 Description

A new era of human development is upon us. The rates of technological, economic, social and environmental change have dramatically increased since the 1950s; we live in a world that is characteristically different from the one all previous generations of humans experienced. On many fronts, humanity is presently navigating the unseen [23]. Despite a variety of undeniable achievements of our species, the world is faced with multiple overlapping crises in economic, social and environmental systems: “human society now appears to be facing a global problematique, a complex of interacting complex problems”[7]. Scientists have forcefully argued that humans have come to dominate the planet and identified “planetary boundaries” that must not be crossed to avoid unacceptable environmental change [21]. Furthermore, scientists have shown that the global ecosystems can be altered “abruptly and irreversibly from one state to another” when they cross critical thresholds. Through their socio-economic activities and environmental interventions (or lack thereof), humans can plausibly cause “a planetary-scale critical transition” [5] with unknown implications for mankind. While the economic way of thinking has a lot to offer in this area, the profession has been lagging behind: “Had field research not been sacrificed on the altar of mathematics and econometrics, or the disciplinary boundaries not been so tightly guarded, economists would have long ago advised a policy correction.” [18]. This class showcases a ‘sane’ side of economics that argues for transformations in social-ecological and economic systems that allow for human prosperity within our planetary limits.

ECON 474/574 - Sustainability and Economic Policy - thus, presents concepts, theories, data and empirical findings critical for analyzing the economics of sustainability, and its practice in communities, cities, countries and regions. Students will work with the instructor to define sustainability and understand how economics relates to the three pillars of sustainability (economic, social and environmental). Students will explore the meaning and history of sustainable development, the link between sustainability and well-being and will analyze sustainability indicators and metrics. We will be exploring, as a class, whether we are we making meaningful progress. Other topics we will explore include an overview of natural resource (green) accounting, the valuation of biodiversity and ecosystem services, urban sustainability, sustainable business practices, the interacting roles of business, government and NGOs, mitigation and adaptation to climate change, and the role of international finance institutions.

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The class incorporates a Service Learning component, for which, students will form groups and address a specific sustainability-oriented research topic. The students will form groups to conduct research for a local sustainability stakeholder; this semester, our stakeholder is ‘The Idaho Business for the Outdoors’, a local non-profit organization (https://www.idahobo.org). The students will work with the instructor and the stakeholder throughout the semester during dedicated weekly time-slots to complete research reports that are responsive to the stakeholder’s research needs.

Weekly class sessions will follow a workshop style; they will consist of a combination of (minimal) lecturing, general discussion and breakout task-focused groups. We will also utilize other educational resources such as documentaries, web talks and online resources. The Instructor reserves the right to change the class syllabus to meet class needs providing due notice.

2 Course learning outcomes (CLOs)

The class aims to increase your capacity to work through sustainability problems and crises and ground solutions in economic thinking. You will be asked to demonstrate ways to think practically and strategically about the interactions of economics and sustainability. You must contribute a research project that clearly demonstrates how to use a sustainability framework in tandem with an economic way of thinking in resolving sustainability problems.

2.1 General CLOs

Among several issues, students will develop an understanding of:

- the concept of sustainability and the pillars of sustainable development (environmental, social and economic);
- the conceptual and scientific foundations of sustainability - ‘weak’ vs. ‘strong’ sustainability;
- the systems perspective in sustainability: interconnected global environmental, economic and social change;
- how modern microeconomics (study of individual consumers and firms) and macroeconomics (study of the nation’s economy as a whole) inform sustainability;
- the role of economic systems and political economy in sustainability;
- the relationship between economic efficiency, equity and sustainability;
- the roles of capital accumulation and distribution, savings, depreciation and the discount rate;
- methods in sustainability research economic (dynamic optimization, valuation techniques for estimating value of non-market ecosystem and social services, agent-based modeling);
- the calculation of various sustainability metrics and indicators;
- market and government failures (arising from externalities, public goods, rent seeking, corruption etc) and their effects on sustainability;
- the importance of global urbanization in sustainability.
2.2 Service Learning CLOs
In terms of the service learning experience, the students will achieve the following learning outcomes.

Academic enhancement:
- understand that complex problems have multiple dimensions and cannot be solved with the knowledge accumulated in only one discipline;
- work effectively in teams and learn from other students with backgrounds in various disciplines;
- work with data, identify problems, and try to quantify issues;
- connect the economy and society with the environment by examining a complex, local issue;

Civic learning:
- engage in the affairs of our local outdoors business community, especially as they relate to its long-term sustainability and prosperity
- work collaboratively across and within communities to achieve generation and dissemination of knowledge that will benefit our city and State.

3 Administrative Information
- Course Number: ECON 474/574
- Course Name: Sustainability and Economic Policy
- Time: Th 4:30 pm - 7:15 pm
- Place: ILC 315
- Instructor: Dr. Michail Fragkias
- Email: michailfragkias@boisestate.edu
- Phone: (208) 426-3308, Fax: -
- Office: Micron Business and Economics Building (MBEB) #3208
- Office hours: Please email your instructor to make an appointment.

4 Prerequisites
Students should know central concepts and analytical approaches used in standard microeconomic and macroeconomic principles classes. It is recommended that students have taken at least three credits of university level microeconomics or macroeconomics. Students lacking a background in environmental issues should consult any introductory book on ecology.
5 Materials

There is no single textbook that will fit this class. Students will be reading academic articles, selected book chapters, and reports, utilizing multiple sources. The instructor will post digital copies or hyperlinks of the weekly readings (on Blackboard) allowing for at least a week for reading prior to class. The major challenge with moving away from textbooks is that you are not presented with a digest of knowledge but have to “chew your own food (for thought)”. This should not be an issue if you are an “intellectually hungry” student. You will also be observing some repetition the more you read, but this is a sign that you begin to master certain material. Below you can find an annotated partial list of books that will serve as sources for our readings. See the last section of this Syllabus for a full reference list.

- Sustainable development: economics and policy by P.K. Rao [20]
  (Instructor Note: Good overview; perhaps a bit outdated in certain areas.)

- Blueprint for a sustainable economy by David Pearce and Edward Barbier [19]
  (Instructor Note: will be on reserve at the library)

- Beyond economic growth: an introduction to sustainable development by Tatyana P. Soubbotina [25]
  (Instructor Note: Uploaded on Blackboard; Comprehensive but very basic for our purposes; use it to cover gaps in your prior knowledge of topics.)

- An introduction to ecological economics, 2nd ed. by Robert Costanza et al.
  (Instructor Note: focuses only on one school of thought and primarily on environmental sustainability issues)

- Valuing the future: economic theory and sustainability by Geoffrey Heal [13]
  (Instructor Note: requires knowledge of dynamic optimization; appropriate for advanced undergraduates and graduate students in economics; we may touch upon the early chapters of that book.)

- Sustainability economics: an introduction by Peter Bartelmus [4]


- Pursuing sustainability: a guide to the science and practice by Pamela Matson, Wiliam C. Clark, and Krister Andersson [17]

6 Class Schedule

The class will cover the following topics:

- Unit 1 - Conceptual Foundations Of Sustainability (2 weeks)
  – Week 1 - Introduction to Sustainability Science - What is Sustainability? What is the Economics of Sustainability
  – Week 2 Foundations of Sustainability and the Relevance of Economic Thought

- Unit 2 - Sustainability Challenges and the Rise of Sustainable Development (4 weeks)
– Week 3 - Sustainability Challenges and Crises: The Environment - Global, Regional and Local Environmental Change
– Week 4 - Sustainability Challenges and Crises: Socio-economic Dimensions - Global, regional and local issues
– Week 5 - A social-Ecological (complex adaptive) systems perspective; Linked ecosystems and socio-economic systems
– Week 6 - From Sustainability Challenges to Sustainable Development; Efforts towards Sustainable Development; Sustainability entering the policy realm. History, Interpretations, and Meaning

• Unit 3 - Measurement and Intervention for Sustainability; Indicators (3 weeks)
  – Week 7 - Measuring Sustainability: Ecology/Natural Science approaches
  – Week 8 - Measuring Sustainability: Macroeconomic/aggregate approaches; Is Prosperity without Growth possible?
  – Week 9 - Measuring Sustainability: Micro approaches; (i) Neoclassical/marginalist economics approach - Valuing environmental amenities; (ii) Ecological economics approaches: ecosystem services valuation; the economics of ecosystems and biodiversity (TEEB)

• Unit 4 - Modeling Social-ecological systems for Sustainability (2 weeks)
  – Week 10 - Quantitative methods: Dynamic optimization; System dynamics; Agent-based models
  – Week 11 - Quantitative Methods (continued) & Research Progress Reports
  – Week 12 - Spring Break

• Unit 5 - Urbanization and Sustainability (2 weeks)
  – Week 13 - Green/Sustainable Cities
  – Week 14 - Economics of land use change

• Unit 6 - Synthesis and Student Project Reports (2 weeks)
  – Week 15 - Synthesis: Economic policy as if sustainability matters; governance of sustainability processes.
  – Week 16 - Student Project Presentations to the Stakeholder(s)

Depending on available time, class will cover other topics too. These include the role of business in sustainability, energy economics, institutional economics, international organizations, externalities and public goods and market failures. Close to the middle of the semester we will dedicate two sessions on (1) service learning (SL) research projects midterm reports and (2) a midterm exam, covering materials discussed up to that point. See ‘Dates’ section for the exact dates. The last 2 weeks of the semester will be dedicated to student project presentations. Guest lecturers may be invited for particular topics throughout the semester. Weekly readings will be posted on Blackboard at least one week in advance.
Table 1: Weekly Readings

<table>
<thead>
<tr>
<th>Week</th>
<th>Theme</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Sustainability Science</td>
<td>[17] (Ch. 1); [11] (Ch. 1)</td>
</tr>
<tr>
<td>2</td>
<td>Foundations of Sustainability; relevance for economics</td>
<td>[12] (Ch. 1); [24]; [22]; [6]</td>
</tr>
<tr>
<td>3</td>
<td>Sustainability Challenges: The Environment</td>
<td>[23]; [21]; [5]</td>
</tr>
<tr>
<td>4</td>
<td>Sustainability Challenges: Socio-economic issues</td>
<td>TBA</td>
</tr>
<tr>
<td>5</td>
<td>Social-ecological (complex adaptive) systems</td>
<td>[16]; [2]; [11] (Ch. 2)</td>
</tr>
<tr>
<td>6</td>
<td>Present efforts towards Sustainable Development</td>
<td>[3]</td>
</tr>
<tr>
<td>7</td>
<td>Measuring Sustainability: Ecology/Nat.Sciences</td>
<td>[19] (Ch. 5); [20] (Ch. 3)</td>
</tr>
<tr>
<td>8</td>
<td>Measuring Sustainability: Macro Approaches</td>
<td>[19] (Ch. 4); [20] (Ch. 6); [14]</td>
</tr>
<tr>
<td>9</td>
<td>Measuring Sustainability: Micro approaches, TEEB</td>
<td>TBA</td>
</tr>
<tr>
<td>10</td>
<td>Modeling Sustainability: social-ecological systems</td>
<td>[15]; [9] (Ch.1-2)</td>
</tr>
<tr>
<td>11</td>
<td>Modeling Sustainability (cont.) &amp; Research Progress Reports</td>
<td>[13] (Ch.1-2)</td>
</tr>
<tr>
<td>12</td>
<td>Spring Break</td>
<td>None</td>
</tr>
<tr>
<td>13</td>
<td>Urbanization and Sustainability</td>
<td>[1]; [10]</td>
</tr>
<tr>
<td>14</td>
<td>Urbanization and Sustainability (cont.)</td>
<td>TBA</td>
</tr>
<tr>
<td>15</td>
<td>Synthesis: Governance of Sustainability</td>
<td>TBA</td>
</tr>
<tr>
<td>16</td>
<td>Student project presentations to stakeholder(s)</td>
<td>None</td>
</tr>
</tbody>
</table>

Fin  Final Exam    Review questions

7 Weekly Readings

8 Grading course components

The components of the course that will be graded are: (1) the Service Learning Research Report, (2) Presentations and Poster, (3) Participation in class discussions, (4) Talking-points assignment, (5) a Final Exam:

(1) Service Learning Project Report/Research Paper: Students will form groups of 2-3 students and will write and present a research paper/report addressing needs of a community stakeholder (non-profit, city or state agency, etc.). This semester we will be working on issues of business and environmental sustainability. Potential topics and style, following general guidelines announced in class, will be discussed during the first three weeks of the class. The chosen topics must be cleared with the instructor (see ‘Dates’ section for the due date). The final product has to clearly show that the students have grasped thoroughly a concrete and technical subject. Use of actual data and analysis is required. Topics, methods and/or techniques discussed in class should be incorporated in the research papers. A hard copy should be submitted to the instructor and the community partner/stakeholder. See ‘Dates’ section for the report due date. It’s hard to conceive that this may be a possibility but just in case: there will be a penalty of 3 points per day assessed against late reports affecting all co-authoring students.

Submitted reports must have a cover page that clearly shows student names, student numbers, date, and a project title. Target approximately 12-15 pages of double-spaced text, not counting endnotes, bibliography, figures and tables, in Times New Roman 12 pt font and 1-inch margins. The paper should follow the guidelines listed here [http://cobe.boisestate.edu/files/2009/05/writingstylesv12_0.pdf](http://cobe.boisestate.edu/files/2009/05/writingstylesv12_0.pdf). Make sure to utilize librarian assistance (check the ‘Library Resources’ link on the BB site) and utilize the writing center for manuscript "polishing"!
(2) Presentations on the research project outline and final paper; participation at the BSU Civic Engagement Poster Exhibition: The second part of the grade will be based on two student presentations and a poster. Students will make two oral presentations during the semester on the topic of their research project. For the first presentation, student groups will present to the instructor and the rest of the class a detailed outline of the proposed project (on the pre-approved topic) (See ‘Dates’ section). The instructor will offer suggestions for changes at that time if needed. The groups should plan for a 20-minute presentation. For the second presentation, students present to the class and the stakeholder the near-final version of their research findings during class time in the last week of the semester; this presentation should be approximately 30 minutes in length and will be followed by a 10-minute question and answer (Q&A) period. All non-presenting student groups are expected to participate in the discussion following each presentation.

The students are also required to participate in the BSU Civic Engagement Student Exhibition with a poster. According to the Service Learning staff: “The Civic Engagement Student Exhibition is a unique opportunity for students who participate in service-learning to showcase their experience through a research or reflective poster about the application of their course work to current community issues.” More information and relevant deadlines and dates can be found in the Service Learning website: http://servicelearning.boisestate.edu/students/sl-student-exhibition/. Furthermore, the SL staff is committed to assisting you in the poster process in person - ask your instructor about a good contact person.

Again, the stakeholders’ input on student performance will be informally taken into consideration for grading purposes. Furthermore, a portion of the presentation/poster grade will be peer-assigned.

(3) Attendance and participation in class discussions: The third part of the grade will be based on your participation in class discussions based on the weekly readings. For about 12-13 weeks of the semester we will read a range of articles that will form the foundation of your knowledge of the issues. Every student is required to complete all the readings. Grading will not be based simply on attendance but active participation in discussion. Please respond (respectfully) to classmates and the instructor, ask good questions, offering thoughtful opinions. Initiative and interest in topics discussed matters! Students will also be asked to lead the discussion on particular topics.

Attendance and participation is very important for this discussion-based seminar and thus mandatory; expressing your viewpoint is critical for the overall success of the course. This cannot be overemphasized... For this reason, missing more than 3 sessions during the semester without an emergency-related verifiable justification will not only reduce your final grade by missing the allocated attendance and participation points but it will also be subject to a penalty of a full grade drop at the end of the semester.

(4) Talking-points review assignment: Every week, students are expected to complete all assigned readings and write a short review prior to coming to class on Monday. You are asked to hand a hard-copy to the instructor at the beginning of the class and upload a Word doc or pdf on a web folder that your instructor will create and share with you. Late assignments will not be accepted. This assignment is meant to help you frame your thoughts about the readings for the week. Treat the review assignment as a set of “talking points” or a memo for our class discussion. It can include
a discussion of issues or ideas spurred by the readings, a critical summary of the week’s readings, or an in-depth critical discussion of one of the longer articles. The review must include (but is not limited to) 3-4 questions that arise from the readings. Keep your reviews to 2-3 pages of writing. The review assignments are designed to ensure that everyone reads the articles and comes to class prepared to discuss them.

(5) Final Exam: The last part of the grade is based on a final exam. See section ‘Dates’ for the relevant date. The exam will follow an essay format.

Your grade will be calculated using the following formula:

\[
\text{FinalGrade} = 0.20 \times \text{ReportGrade} + 0.15 \times \text{PresentationsGrade} + 0.20 \times \text{DiscussionGrade} + 0.20 \times \text{TalkingPointsGrade} + 0.25 \times \text{ExamGrade}
\]

Final grades will be assigned according to the scheme presented in Table 2.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points Range</th>
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</thead>
<tbody>
<tr>
<td>A+</td>
<td>≥ 96.5 points</td>
</tr>
<tr>
<td>A</td>
<td>92.5-96.49 points</td>
</tr>
<tr>
<td>A-</td>
<td>89.5-92.49 points</td>
</tr>
<tr>
<td>B+</td>
<td>86.5-89.49 points</td>
</tr>
<tr>
<td>B</td>
<td>82.5-86.49 points</td>
</tr>
<tr>
<td>B-</td>
<td>79.5-82.49 points</td>
</tr>
<tr>
<td>C+</td>
<td>76.5-79.49 points</td>
</tr>
<tr>
<td>C</td>
<td>72.5-77.49 points</td>
</tr>
<tr>
<td>C-</td>
<td>69.5-72.49 points</td>
</tr>
<tr>
<td>D+</td>
<td>66.5-69.49 points</td>
</tr>
<tr>
<td>D</td>
<td>62.5-66.49 points</td>
</tr>
<tr>
<td>D-</td>
<td>59.5-62.49 points</td>
</tr>
<tr>
<td>Fail</td>
<td>≤ 60 points</td>
</tr>
</tbody>
</table>

9 Important Dates

- Clear report/research topic with the instructor - February 1, 2018
- Research project midterm reports - March 22, 2018
- The submission deadline for posters as well as the date/time of the Service Learning Student Exhibition can be found at the Service Learning website: [https://servicelearning.boisestate.edu/](https://servicelearning.boisestate.edu/) The event is typically held at the Student Union Building in late April.
- Final reports due - April 26, 2018
- Final Exam - Thursday, May 3, 3:00 p.m. - 5:00 p.m.
10 Attendance and Behavior

Enrolled students are expected to attend all classes and discuss the readings. Apart from graded, the in-class discussions will be contribute substantially to the quality of your research papers and obviously the midterm exam. I also expect you to see me during office hours - discussing progress on your papers and other class materials.

Students are expected to treat each other and the instructor with respect, and to be civil during in-class group discussion. Cells/pdas/smartphones should be turned off; laptops, tablets and other electronic devices should be used for note taking or classroom exercises/demonstrations. Please inform the instructor if you are going to be late for class or have to leave early.

References


