Principles of Sustainability – FS 436/536 (3 cr) Spring 2020 (v.1.11.20)

Doculectures: Online – Scheduled/Bundled Weekly

Prerequisites for class: None; Upper-division or graduate student standing required.
Instructor: Professor Greg Möller Office Location: 204a Food Research Center

Telephone: 208-885-0401 desk, or personal cell phone (preferred) E-mail: gmoller@uidaho.edu

Delivery: Online via SD/HD streaming video. Students are required to have modern computer hardware and software, and access to a broadband internet connection. Specific requirements are given on the course web site. Lectures are available by streaming video. The doculectures are available in streaming SD and HD (720p/1080p) embedded in the Principles of Sustainability course web site. The doculectures are available for direct streaming or download to computers, smartphones or tablets at the Course Web Site using the URL www.webpages.uidaho.edu/sustainability or the Vimeo Home Page for Professor Greg Möller using the URL http://vimeo.com/gregmoller. The doculecture videos can also be accessed directly at the Vimeo Channel for Principles of Sustainability using the URL http://vimeo.com/channels/prinsus With this Channel and an internet connection you can also explore doculectures in large screen HD using the media streaming capability of video game consoles (e.g. XBOX, PlayStation), streaming media players (e.g. ROKU), streaming media capable Blu-Ray DVD players, or internet-enabled smart televisions (Internet Protocol Television, IPTV). This approach requires accessing the Vimeo Channel for the course. Doculectures, with surround-sound and virtual elements, are audio optimized for headphones.

Both on-campus and off-campus students will view formal doculectures over the Web. Students can view doculectures anytime over the Web as your schedule and location permit. Because of the nature of the course, no formal office hours are scheduled; however I can meet with you online, by phone, by text, or in my office most anytime you wish – please contact me with any questions or concerns you may have. Email/phone contact (off/on-campus) or office appointments (on-campus) are welcome. Phone/text contact via personal cell phone # given to enrolled students. All official course communications using email will be by the student’s official university email address; please forward that email address to any other, if you prefer alternate email addresses.

Textbook:
Introduction to Sustainability: Road to a Better Future, by Nolberto Munier. Springer; 1st edition; 456 pages; ISBN-10: 1402035578 (Available new ($$) and used ($) from online booksellers; in ebook, paperback).

Online Course Web Site and Learning Management System:
Course Web Site: http://www.webpages.uidaho.edu/sustainability
Blackboard: UI BlackBoard LMS for lecture homework and exams (linked via course website for students).

Course Abstract: Sustainability is a broad area of inquiry, rapidly changing as we develop new knowledge of human practices that are more sustainable or less sustainable. Seek a hard vision of sustainability and you will surely be disappointed. Our gaps in knowledge are great, but the task of growing a more sustainable global community is greater. We are faced with immense challenges that grow greater by the day. The social, political, economic, and environmental complexity of the task often confounds and defeats simplistic approaches, yet many of our solutions will lie in a simplification of our approach to community and commerce.

Crafting a sustainable present and future has all the elements of a "super wicked problem" (Levin et al., 2007):

1. Time is running out.
2. No central authority.
3. Those seeking to solve the problem are also causing it.
4. Hyperbolic discounting occurs.

It is the mission of the Principles of Sustainability course to provide students with a broad understanding of sustainability in the multiple human dimensions that it is manifested. Upper-division and graduate-level students from many disciplines will find the courseware of broad interest, intense in some areas and introductory in others, but complete in a desire to present the landscape of a general study in sustainability. The course attempts to synthesize linkages and commonalities of understanding through a presentation of the major elements in the field.
Other specialty courses in a student’s disciplinary area may give a sidebar or complete disciplinary treatment to sustainability that will help organize a complete understanding in a particular focus area of sustainability, and thus complement this course.

**Frequently Asked Questions (FAQs):** A comprehensive listing of FAQs and answers regarding the course is downloadable from the course website.

**Student Learning Outcomes:** Upon successful completion of this course, students will

1. Be able to demonstrate a fundamental knowledge of issues, principles, concepts, processes, and practices related to sustainability.
2. Be able to demonstrate a fundamental knowledge of the history of relationships to nature and how that has influenced the success of societies in the ancient world and the modern era; demonstrate an understanding of the major international organization efforts to advance sustainability from the late 20th Century onwards.
3. Acquire mastery with the major issues, concepts, documents, and subject areas in some of the major arenas and domains of critical concern to sustainability;
4. Acquire mastery of sourcing and synthesizing information in aspects of sustainability, especially as it related to resources management, social and economic systems, and the basic science and engineering of critical aspects of sustainable development.
5. Be able to demonstrate a high quality of knowledge about the occurrence and significance of major concerns and developments in progress towards more sustainable communities, commerce, and management of natural resources.

Learning outcomes are assessed through student papers, including the midterm exam, case study and grad-credit topic reviews, as well as completion of homework and the final exam.

**Week-to-Week Course Outline:** There is a variable number Chapter Parts assigned per week and each doculecture Part can have an assigned homework question set that is available in UI Blackboard/WSU Angel. Doculectures can be 12-50 minutes long. As these are PowerPoint-free presentations, there are no slide notes, and students are encouraged to take notes after/during the presentations. There will be prompt questions for discussion and peer-review of postings is encouraged. The schedule below is advisory and there is significant student-driven flexibility in accommodating student workload, commitments and crises.

**Course Doculecture Schedule (*readings only)**

**Week 1 & 2 January 12 – January 25**

**Chapter 1 - The Origins of Sustainability**
- Part 1 - The Ancients and Nature (18:02)
- Part 2 - The Great Naturalists (33:15)
- Part 3 - Religion and the Environment (11:40)
- Part 4 - 20th Century Awakening of Sustainability*
- Part 5 - Silent Spring as a Watershed Moment (59:43)
- Part 6 - A Planet in Peril (34:48)

**Week 3 & 4 January 26 – February 8**

**Chapter 2 - Standards of Sustainability**
- Part 1 - Definitions of Sustainability (14:09)
- Part 2 - Methods and Markers for Sustainability (17:04)
- Part 3 - Sustainable Development (28:21)
- Part 4 - Resilience Thinking in the 21st Century (27:56)
- Part 5 - The Precautionary Principle (30:30)
- Part 6 - Emergy (21:15)
- Part 7 - People + Planet + Profit (15:23)
Week 5 & 6 February 9 – February 22
Chapter 3 - A Culture of Waste
Part 1 - Solid Waste Generation in the Developed and Developing World (42:43)
Part 2 - Solid Waste Management in the Developed and Developing World (41:50)
Part 3 - Reduce Reuse Recycle (16:23)
Part 4 - Hazardous Waste Management (20:19)
Part 5 - E-Waste (22:49)
Part 6 - Our Plastic Footprint (36:59)

Week 7 & 8 February 23 – March 7
Chapter 4 - The Built Environment
Part 1 - Green Urbanism*
Part 2 - Community Sustainability (16:54)
Part 3 - Green Building (20:25)
Part 4 - The Urbanization of Poverty and Slums: Challenges for Sustainability (21:53)
Part 5 - Urban Heat Island Effect*
Part 6 - Sustainable Transportation I (17:16)
Part 7 - Sustainable Transportation II (15:45)

Week 9, 10 & 11 March 8 – March 28
Chapter 5 - Industrial Approaches to Sustainability
Part 2 - Life Cycle Assessment (42:40)
Part 3 - Materials Flow Analysis*
Part 4 - Design for the Environment*
Part 5 - Managing for Sustainability (13:22)
Part 6 - Sustainable Agriculture (48:42)
Part 7 - Sustainable Forestry*
Part 8 - Principles of Green Engineering and Green Chemistry*

Weeks 12, 13 & 14 March 29 – April 18
Chapter 6 - Energy Sustainability
Part 1 - Fundamentals of Electricity (33:29)
Part 2 - Electricity: Generation (40:08)
Part 3 - Electricity: Transmission, Distribution, Economics*
Part 4 - Fossil Fuels: Coal (18:30)
Part 5 - Fossil Fuels: Oil (27:54)
Part 6 - Fossil Fuels: Natural Gas (19:39)
Part 7 - Climate Change*
Part 8 - Alternative Energy (22:23)
Part 9 - Energy Efficiency as a Resource (19:23)
Part 10 - Renewable Energy (16:56)

Week 15 & 16 April 19 – May 2
Chapter 7 - Sustainable Solutions for Water Resources
Part 1 - US and Global Water Resources (19:00)
Part 2 - Water-Related Disease (17:04)
Part 3 - Wastewater Treatment in Developed Countries (23:32)
Part 4 - Sanitation Challenges and Approaches in Developing Countries *
Part 5 - Water Reuse and Recycling*
Part 6 - Land and Water Resources for Food and Agriculture*
Part 7 - Water Competition (12:50, 10:29, 11:30)
Week 17 May 3 – May 9
Chapter 8 - Measuring Sustainability
Part 1 - Indicators of Sustainability (29:23)
Part 2 - Environmental, Economic, and Social Carrying Capacity (12:51)
Part 3 - Sustainability: Strategies for Monitoring Progress (11:34)

Course Accessibility: Principles of Sustainability has been designed towards best practices for access by people with or without disabilities. Enrolled students have transcripts of doculectures on the BlackBoard course site. Please contact the instructor for support in accessing course materials.

Readings: As assigned on course Web site via UI BlackBoard LMS. Each Chapter Part has a variable-length reading assignment that can include the textbook, scholarly papers, and web-accessible resources.

Homework: As assigned on the course Web site. Delivered BlackBoard LMS. Most Chapter Parts have an online homework submission that will take a variable amount of time, usually 15-30 minutes if the reading and lectures have been completed.

Homework Projected Percent of Effort:

<table>
<thead>
<tr>
<th>Homework</th>
<th>436 Homework</th>
<th>536 Homework</th>
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</thead>
<tbody>
<tr>
<td>30% Case study report</td>
<td>20% Case study report</td>
<td></td>
</tr>
<tr>
<td>70% (total) Doculecture Part readings, problems, discussion</td>
<td>50% (total) Doculecture Part readings, problems, discussion</td>
<td></td>
</tr>
<tr>
<td>30% Topic review</td>
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Examinations: There are two exams in this course: one midterm and one final exam. The examinations are electronically delivered and electronically returned. The exams are an individual effort, take home, and open book/open web. The midterm exam is a written exam paper (hard target is 4000 words and at least 12 references) and the final exam is 50 multiple-choice questions. The exams will take variable time to complete, depending on the individual student. Depending on your writing efficiency, the midterm writing challenge can take days to complete (in a 7-10 day window of exam receipt/submission opportunity), but the final exam will be a timed event with a window of a few hours for completion from the time of start. The midterm writing exam is planned for the week of March 6th to March 15th. The, timed, online Final Exam (multiple choice like homework) is planned to be opened and accessible in BlackBoard from May 9th to May 12th.

Case Study Report: All students will be required to prepare a case study report (hard target is 4000 words, double or single-spaced; 1-inch margins; 12 pt font; 12 references minimum). Your case study will examine an issue in sustainability focusing on a specific case, not a broad topic. A case study presents a challenge to be solved, or has a demonstrated effort focused on the solution. The case study can be at the community, regional, national or international level, however it must be specific. Background research for this assignment is from the peer-reviewed literature (12 or more references), scholarly publications (books/reports), and online information from reliable sources and materials targeting a professional audience (typically government, agency, NGO, or scientific society). No advocacy group, Wikipedia, or grey literature citations; please consult the instructor if you are unsure about this. The full paper is to be submitted no later than midnight on the evening of April 18th. Additional case study information and a grading rubric are presented in the Resources section of the course web site. Specific paper style should target your discipline. You are required to submit the paper via email gmoller@uidaho.edu with the file name “lastname.firstinitial.sustS20casestudy.doc”.

Graduate Credit Topic Review: Students taking the course for graduate credit will be required to write a review paper using one of the doculecture Part titles of the Principles of Sustainability course. The paper will be reviewed for completeness, technical accuracy, and presentation (readability, grammar, and spelling). The paper should review the major issues and contain a bibliography of published papers. The paper should attempt to update the material and/or conclusions presented in the lecture with a review of current information found from the peer-reviewed recent literature (15 or more references mostly less than 5 years old), scholarly publications (books), and online information from high-quality professional audience reliable sources (typically government, agency, NGO, or
scientific society). For completeness in this professional quality review paper, target 4000 words. The maximum length for this double-spaced (1-inch margins; 12 pt font) report is 25 pages (fully inclusive). The completed review is to be submitted no later than midnight on the evening of May 9th. Additional information and a grading rubric are presented in the Resources section of the course website. This paper should be publication quality. You may want to consider at least one online, telephone, or in-person instructor-graduate student interview to discuss the outline, scope, and progress of this paper. You are required to submit the paper via email gmoller@uidaho.edu with the file name “lastname.firstinitial.sust20topicreview.doc”.

*It is your responsibility to understand what plagiarism is and how to avoid it.* Any paper with sections that are either entirely or partly copied, is copied word-for-word, or is rephrased by changing words in a sentence (or from another student’s or author’s work) is not acceptable. These are instances of plagiarism, which is a very serious academic offense that involves stealing another person’s thoughts. Your writing will be compared electronically with millions of data-based documents and examined for copied phrases and sentence structure rearrangements. Copying phrases or rearranging an author’s sentence structure is considered plagiarism, which is a very serious academic offense with the consequences outlined in the syllabus. If you are unfamiliar with the definition and examples of plagiarism, or the guidelines for avoiding plagiarism please refer to the course syllabus and the wealth of quality plagiarism guidelines searchable on the WWW.

***IMPORTANT: All papers submitted will be electronically scanned for evidence of plagiarism. Evidence of plagiarism will result in an automatic grade of zero for the submitted work, and in severe cases carries the potential for university academic dishonesty review and sanction according to university policies (see below).***

### Grading Weight Breakdown:

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<tr>
<th></th>
<th>436 Students</th>
<th>536 Students</th>
<th>Pre-Weighted Points</th>
</tr>
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<tbody>
<tr>
<td>Homework¹/discussion*</td>
<td>30% (discussion* =10%)</td>
<td>20% (discussion* =10%)</td>
<td>variable</td>
</tr>
<tr>
<td>Exam #1 Midterm</td>
<td>20%</td>
<td>15%</td>
<td>100</td>
</tr>
<tr>
<td>Exam #2 Final</td>
<td>10%</td>
<td>10%</td>
<td>100</td>
</tr>
<tr>
<td>Case Study Report</td>
<td>40%</td>
<td>25%</td>
<td>100</td>
</tr>
<tr>
<td>Topic Review</td>
<td>Not required</td>
<td>30%</td>
<td>100</td>
</tr>
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¹ Homeworks, in BlackBoard, are typically 4 or 5 question assessments of lecture/reading material.

*Seed discussion prompts will be posted in UI BlackBoard for a Chapter Part. Discussion participation will be graded by participation/responsiveness (5 point scale each) and totals added into the course grade weighted as above. Students are also encouraged to comment/reply in the lecture discussion with short readable/informative/positive comments AND to peer-review the comments of others.*

**Grade Distribution:** The grade scale applied each semester may be curved depending on class achievement (e.g., an A grade may be earned with 89% as opposed to 90%). Students enrolled in 436 or 536 are in different final course grade distribution pools so the extent of grade curving could be different.

<table>
<thead>
<tr>
<th>Grade Scale</th>
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<tbody>
<tr>
<td>&gt;90%</td>
<td>A</td>
</tr>
<tr>
<td>80-89%</td>
<td>B</td>
</tr>
<tr>
<td>70-79%</td>
<td>C</td>
</tr>
<tr>
<td>60-69%</td>
<td>D</td>
</tr>
<tr>
<td>≤59%</td>
<td>F</td>
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</tbody>
</table>

**Relationship of Grading Strategy and Student Learning Outcomes:**

1. Homework will require an understanding of lecture material and reading assignments.
2. Exams will require students to demonstrate mastery of course material and synthesize available information into practical demonstrations of sustainability concepts.
3. Course papers will require the student to demonstrate their subject matter mastery, communication skill, and ability to obtain primary sources of best available information in an applied science interpretative challenge.

4. Grading rubrics for written papers will be available to students to link subjective assessment targets with student work submission.

Campus Resources: [UI Library; WSU Library; UI Writing Center; WSU Writing Center]

Disability Support Services Reasonable Accommodations Statement:

UI: CENTER FOR DISABILITY ACCESS AND RESOURCES REASONABLE ACCOMMODATIONS STATEMENT:

- Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through the Center for Disability Access and Resources located in the Bruce M. Pitman Center, Suite 127 in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course.
- Phone: 208-885-6307
- Email: cdar@uidaho.edu

Website: [www.uidaho.edu/current-students/cdar]

WSU: Reasonable accommodations are available for students with a documented disability. WSU Online and the Access Center work together to provide reasonable accommodations for students who have documented disabilities and who are registered both with WSU Online and the Access Center. WSU Online's liaison to the Access Center will assist you in getting started. To begin this process, contact WSU Online (800-222-4978 or distance@wsu.edu). We strongly recommend that you notify us as soon as possible. All accommodations must be approved through the Access Center.

Course Honor Code:

Terms and conditions for students taking this course (EnvS/FS 436/536). By enrolling in this course, you agree to the following terms and conditions:

1. I will not use or represent the work of another as my own. This specifically includes the use of other students’ work, WWW resources, and published works. I understand that attribution of source is encouraged and a part of the ethical practice of science and learning.

2. I will abide by the instructions on exams, tests, quizzes and homework assignments when they are labeled or assigned as closed book, individual effort or other such designation of assistance or period of performance. I further understand that it is my ethical duty, on my honor, that I abide by these instructions even in the absence of an instructor or exam proctor.

UI Academic Integrity:

University of Idaho, Faculty Staff Handbook: ARTICLE II--ACADEMIC HONESTY. [section renumbered 8-07]

1. Cheating on classroom or outside assignments, examinations, or tests is a violation of this code.

2. Plagiarism, falsification of academic records, and the acquisition or use of test materials without faculty authorization are considered forms of academic dishonesty and, as such, are violations of this code.

3. Because academic honesty and integrity are core values at a university, the faculty finds that even one incident of academic dishonesty seriously and critically endangers the essential operation of the university and may merit expulsion. [rev. 7-98]

4. The operation of UI requires the accuracy and protection of its records and documents. To use, make, forge, print, reproduce, copy, alter, remove, or destroy any record, document, or identification used or maintained by UI violates this code when done with intent to defraud or misinform.

5. All data acquired through participation in UI research programs is the property of the university and must be provided to the principal investigator. In addition, collaboration with the University Research
Office for the assignment of rights, title, and interest in patentable inventions resulting from the research is also required [see 5400 A through E].

6. Entrance without proper authority into any private office or space of a member of the faculty, staff, or student body is a violation of this code.

7. It is also a violation to hack or make unauthorized use of any computer or information system maintained by the university or a member of the faculty, staff, or student body. [rev.7-05]

8. Instructors and students are responsible for maintaining academic standards and integrity in their classes. Consequences for academic dishonesty may be imposed by the course instructor. Such consequences may include but cannot exceed a grade of “F” in the course. The instructor should attempt to notify the student of the suspected academic dishonesty and give the student an opportunity to respond. The notice and the opportunity may be informal and need not be in writing. Penalties for any disciplinary infraction must be judicially imposed. [See 1640.02 C-5] [rev. 7-98]

9. Instructors may report incidents of academic dishonesty to the dean of students. Upon receiving such a report, the dean of students shall provide the student with written notice that a report has been made and an opportunity to meet with the dean to discuss the report. The dean of students shall maintain the report and any record of the meeting for a period of time deemed appropriate by the dean. The dean of students may file a complaint against the student after the meeting has taken place or the student has elected, either affirmatively or through inaction, not to meet with the dean. [add. 7-98]

WSU Academic Integrity:

WSU expects all students to behave in a manner consistent with its high standards of scholarship and conduct. Students are expected to uphold these standards both on and off campus and acknowledge the university’s authority to take disciplinary action. The purpose of these standards and processes is to educate students and protect the welfare of the community. The standards of Conduct for Students can be found at http://conduct.wsu.edu University instructors have the authority to intervene in all situations where students are suspected of academic dishonesty. In such instances, responsible instructors retain the authority to assign grades to students considering, from an academic standpoint, the nature of the student action. More information regarding responding to academic integrity violations can be found at http://conduct.wsu.edu. Feel free to contact the Office of Student Standards and Accountability (335-4532) if you would like more specific information about the process. Writing Programs (335-7959) can assist with proactive assignment design that minimizes intentional or unintentional academic dishonesty.

Plagiarism:

Plagiarism is defined by Webster’s Dictionary as, “to steal and pass off the ideas or words of another as one’s own.” There are two general forms of plagiarism:

(a) Unintentional: the use of other writers’ words, phrases, sentences, paragraphs as though they were your own without understanding the need to cite the original source. Unintentional plagiarism normally occurs when the individual does not understand the conventions of scientific writing and the need to cite sources of information.

(b) Intentional: the use of other writers’ work and claiming it as your own. Intentional plagiarism includes knowingly copying or incorporating sections of books, articles, or other sources into your work without citation.

To avoid plagiarism, you must acknowledge the source of information. In scientific writing, this can be performed in the text of your work through the use of surnames of authors and the year of publication or by using numbers enclosed by parentheses which correspond to specific citations in the reference section. In addition to employing citations in the text, plagiarism can be avoided by applying special techniques when writing about information obtained from a source:

(a) Paraphrase: rewording information in which you accurately present the main ideas from the source but do so using your own organization, words, and sentence structures.

(b) Summary: a concise statement of the main idea from a section within a source.
(c) Direct quotation: use of quotes surrounding the passage written by another author.

In general, paraphrasing (a) and the use of summary statements (b) are very common techniques used in scientific writing. Use of quotations (c) in scientific writing is rare and should be avoided.

Plagiarism is dishonest and is not tolerated. If caught using all or portions of a current or former classmate’s writing or other sources of information, a grade of “zero” will be given for the exercise. Additional penalties for plagiarism are possible as outlined in the University of Idaho and/or Washington State University Student Handbook.

Safety: Washington State University is committed to maintaining a safe environment for its faculty, staff, and students. Safety is the responsibility of every member of the campus community and individuals should know the appropriate actions to take when an emergency arises. In support of our commitment to the safety of the campus community the University has developed a Campus Safety Plan, http://safetyplan.wsu.edu it is highly recommended that you visit this web site as well as the University emergency management web site at http://oem.wsu.edu/ to become familiar with the information provided.

Course Sustainability Statement: With the possible exception of the textbook, this course is designed to be electronically available, and paper-free. Exams, homeworks, and students papers are all distributed and returned electronically. Think first about printing, and please only print course material if it is necessary.