Thinking Sustainably
Planning and Decision Making Under Uncertainty and Complexity
Winter Term 2016, PPPM 399 Special Studies
2 p.m. to 4:00-6:50 p.m. Monday’s in 125 McKenzie Hall

Instructor: Bob Doppelt, Executive Director of The Resource Innovation Group and Adjunct Instructor in the Department of Planning, Public Policy and Management.

Office Hours: By Appointment Only
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Course Overview
When seeking to understand the sources and solutions to problems, humans usually search for simple straight-line cause and effect. We seek to identify the one or two factors that are assumed to produce the outcomes we see. In today’s increasingly complex world, however, linear cause and effect usually thinking leads to erroneous perceptions and failed or even harmful solutions. Decisions made in one arena, such as energy production or the built environment, often produce unintended negative consequences in other arenas, such as within the earth’s climate or for disadvantaged groups. Through experiential learning, readings, and a group project this course will provide theory and practice in 'sustainable thinking': how to understand and achieve optimal economic, social and environmental outcomes by thinking, planning, and making decisions from a systemic sustainability perspective. The skills and perspectives learned in the class are applicable to many professional fields and will be useful throughout entire lifetimes.

The Class Will Learn:
• How our beliefs, assumptions and thought patterns shape the way we structure our social, economic, and environmental systems and how those structures produce daily and long-term patterns of events.
• How to use simple tools such as ‘causal loop diagrams’ and ‘behavior over time graphs’ to understand and map the multiple linkages involved with complex problems.
• How to use ‘systems archetypes’ to understand likely changes in the behavior of a social, economic or environmental system.
• How to identify and employ the highest leverage points for positive change in a system.
• The three phases of a comprehensive sustainable thinking intervention.

This course is applicable to students in any field seeking to learn how to understand and resolve chronic complex socio-economic-environmental problems including:
• Public policy
• Urban and regional planning
• Business
• Environmental studies
• Economic and sustainable development
• Non-profit management
Education

**Instructional Methods**
The course will combine lectures, class exercises, weekly, and bi-weekly homework assignments including teaching experiences, a group project, mid term and final exams, and a final paper. The instructor seeks to encourage students to constantly challenge their personal assumptions and beliefs—their mental models—by establishing a fun and personally rewarding atmosphere.

The group project will provide students with an opportunity to learn as a team how mental frames and systemic structures blind people to reality and constrain effective thinking and action. They will also help students learn how to develop high leverage interventions for change in complex situations.

**Grading**
- Weekly assignments: 10%
- Contribution to group project written paper and class presentation: 15%
- Final individual paper: 25%
- Exams (2 x 25%): 50%

**Class Assignments**
- **Weekly Assignments and Teaching Experiences:** Students will often be asked to investigate a specific complex issue, complete a short written systems analysis, and share their work with the class. In addition, each student will organize and teach three short (and fun!) ‘beginners classes’ to 2-6 friends, family members, or fellow employees in ‘sustainable thinking’ (each approximately 1 hr. in length). The first will cover Phase 1, the second Phase 2, and the third Phase III of a sustainable thinking intervention. The goal is to teach your “class” how to understand and apply sustainable thinking. More importantly, the goal is to improve your personal understanding of the process. A 3-4 page “Analysis and Reflection” paper describing how the teaching went, what you learned about yourself, and what you learned about using sustainable thinking to solve complex problems is required after each teaching experience.

**Due Dates:**
- Weekly to bi-weekly short assignments
  - 1st Teaching Assignment Analysis and Reflection Paper Due: Week 5
  - 2nd Teaching Assignment Analysis and Reflection Paper Due: Week 7
  - 3rd Teaching Assignment Analysis and Reflection Paper Due: Week 9
- **Mid Term and Final Exams:** A mid-term exam will be given during Week 6 and a final exam will be given during the assigned date and time of Exam Week.
- **“Group Learning” Project:** Each student will participate in a “learning group” which will produce a detailed analysis of how sustainable thinking can be used to analyze, plan for, and resolve a specific complex sustainability problem chosen by the group. Each group will together write a 10-15 page written report and also present their analysis and proposed high leverage interventions to the entire class through a presentation that may include a class role-play.
Group Report and Class Presentation Due: Week 10

- **Final Paper**: At the end of the term each student will write a 8-10 page “Sustainable Thinking Analysis and Intervention” final paper that applies the key aspects of a sustainable thinking intervention to a specific complex problem chosen by the student (must be different from the problem chosen by your ‘learning group’). The paper should include the identification of relevant variables, behavior-over-time graphs, causal loop diagrams, key choice points, and recommendations for high leverage interventions.

**Final Paper Due**: Week 10.

**Instructions for Learning Groups:**

1. Students will form learning groups of 4-5 people. Each person in a learning team group will present a complex sustainability problem or situation he/she would like to understand. The group will then select one issue to focus on.

2. Using the information obtained through the readings and class presentations each group will meet regularly outside of class to apply the three phases of a sustainable thinking intervention to the chosen issue.

3. During week 10 each learning group will share their analysis and proposed interventions by designing a role-playing scenario to be enacted in class with members of the class. This can be done in several ways:

   a. Writing a scenario and script that specify the roles, statements, and actions of various “actors.” The "script" can be fairly precise or it can be open-ended so as to allow the actors different possibilities for interpreting the situation.

   b. Providing a general description of the situation which includes: the setting in which the problematic situation is found; the different actors who are involved in this setting; an articulation of different actors' aims, expectations, habits, and binds; and anything else that would help people get a feeling for what makes the situation problematic and challenging.

4. In the class role-play, the learning group may seek volunteers to perform the different roles of the role-play exercise. The learning group will then coach these volunteers in their roles, observe their "performances," and debrief the whole exercise with the class.

5. The debriefing will include a discussion of the dynamics (mental frames, systemic structures, systems archetypes, and resulting behaviors) evident in the complex problem/situation. The debriefing will close with a discussion of how the
problem/situation might be addressed and resolved through high leverage sustainable thinking interventions.

6. The goal of each role play is to bring to life a real situation where the mental frames of key actors and systemic structures are shaping what occurs, so that the class gains insight into how and why people get stuck in problematic situations via dysfunctional thinking, planning and decision making. The role play should also demonstrate how people can use sustainable thinking to develop more effective responses.

**Required Reading (available at UO Duckstore)**

- Other reading material will be assigned by the instructor

**Class Participation**

Students are expected to obtain, read, and retain the readings for each week and to come to class prepared to discuss the content and implications. Regular class attendance and full participation is expected.

**Classroom Environment**

I like an atmosphere in which students are comfortable openly expressing their opinions and perspectives about the readings, assignments, and issues the class addresses. Students are therefore expected to approach the readings and other class work with an open mind and to be willing to constantly question their own assumptions and biases.

**Professional Practice**

This class will provide students with a new way to think and problem solve. If students apply themselves, it can be one of the most important classes taken at UO because it will provide tools and methods for making sense of and designing solutions to complex problems. These skills are transferable to any professional field and are applicable throughout an entire lifetime. As such, students are expected to behave in a professional manner at all times.

- Students should *always* treat each other and the instructor with professional courtesy.
- All communications related to the course and all work turned in for the class should reflect professional standards for tone, presentation, formatting, writing, spelling, and editing.
- The classroom will be a place of focused experiential learning. This requires that students *arrive on time, stay until the end* of the class period, *do not text, surf the web, talk on cell phones during class, or chat with other students* when the instructor or other students are speaking to the entire class, and refrain from any other activity that disrupts class learning. Students who fail to adhere to these
guidelines will be asked to leave for the remainder of the class session. Students who are asked to leave more than one class will be dropped from the course.

- All course assignments should be completed using a word processor. No hand written materials will be accepted, with the possible exception of causal loop diagrams.
- You will be required to use Powerpoint or other electronic presentation instruments during class presentations.

**Course Workload**
A general rule of thumb for the expected workload for an undergraduate is approximately 2-3 hours per week per credit hour. Thus, this four credit course will require between 8-12 hours of effort per week. Our class meets for three hours once a week, so students should be expected to spend an additional 5-9 hours per week studying for this course.

**Writing Lab**
Students will be expected to write a number of reports during the class. If you struggle with writing I encourage you to use the services of the Writing Lab or a tutor.

**Documented Disabilities**
Students who have a documented disability and anticipate needing accommodations in the course should make the arrangements to see the instructor as soon as possible. They should request that the Counselor for Students with Disabilities send a letter verifying the disability. Please notify me if aspects of the instruction of the course result in barriers to your participation. You may also want to contact UO Disability Services.

**Email**
I want to interact with each student on a regular basis. I will therefore try to respond to an email with a question or comment within 24 hours of receiving it. However, I am a working professional with many competing demands. At times it will be difficult for me to respond promptly to you. I therefore ask that you make sure you have checked course materials, other students in the class, and the syllabus prior to sending an email about course logistics.

**Assignments and Late Assignment Policy**
I do not accept assignments by email. If you are unable to make it to class on the day an assignment is due, prior to the class you can place a hard copy in the adjunct instructor box in the Hearth in the PPPM office in Hendricks Hall. Late assignments receive only partial credit. Assignments received more that two weeks late receive no credit.

**Missed Class Policy and Class Powerpoint Presentations**
If you miss a class, please arrange to get class notes from a classmate. I will email the Powerpoint presentation to all students no later than 48 hours after the class in which it was given. No other instructor notes will be available.

**Incomplete Policy**
Students are expected to behave in a professional manner and to turn in all materials at the assigned day and time. In accordance with university regulation, an incomplete will be given only when “the quality of the work is satisfactory but a minor yet essential requirement of the course has not been completed for reasons acceptable to the instructor.” I do not consider papers handed in late to be an acceptable reason for an incomplete.

**Academic Misconduct**

You are expected at all times to do your own work. Copying content from other students or the web or other books and submitting it as your own is grounds for failing the class. The University Student Conduct Codes (available at conduct.uoregon.edu) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct.

**Plagiarism**

Students should at all times properly acknowledge and document all sources of information, including quotations, paraphrases, ideas, and data. If there is any question about whether an act constitutes misconduct, it is the students’ obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at http://libweb.uoregon.edu/guides/plagiarism/students

**Exams**

Students must take the exams to receive a grade in the course. It will not be possible to take exams prior to the scheduled date and time. A make up exam will be scheduled for students who miss a regularly scheduled exam. The only justification for missing an exam that will allow a student to take a make up is a serious illness or family matter. A note signed by your doctor or senior family member will be required to substantiate a justifiable absence.

**Cold and Flu Policy**

Students with colds, severe respiratory or flu-like illness must avoid attending class until they are without fever or serious symptoms for 24 hours without the aid of fever-reducing medication. Students with absences related to severe respiratory or flu-like illness will be given the opportunity to make-up their assignments and class content without penalty. It is the responsibility of the student to notify the instructor, in advance, when absent due to influenza. Faculty are under no obligation to excuse absences related to concerns of acquiring influenza by coming to class. Pregnant students in clinical areas where direct contact with patients positive for influenza is likely should work with their instructor to prevent exposure.

All students should utilize the following precautions to prevent influenza exposure: 1) Frequent handwashing – consider carrying a bottle of alcohol cleanser with you at all times; 2) Cover your cough; 3) Place used tissues immediately in the waste basket followed by washing your hands; 4) Use approved disinfectants on shared surfaces – such as doorknobs, desk tops, etc. and, 5) Stay home if you have severe respiratory or flu-like
illness. Call your health care provider if you are experiencing flu-like symptoms AND
you have an underlying health condition which increases your risk of complications OR
if you become concerned about your condition. Seek care immediately if you develop
warning signs of more severe infection.

Students should anticipate absences and assure they have access to the Internet.
Regardless of a student’s status, students must complete the requirements of the course to
receive a passing grade. Both abuse of a more lenient absence policy and attendance of
classes while contagious will demonstrate a lack of academic integrity.

Schedule of Content (Subject To Change)

Week One
• The nature of complex versus complicated systems: case in point global warming
• Linear versus sustainable thinking
• Sustainable thinking definition and core principles
• Sustainability in socio-ecological systems.

Reading assignment: Part I (chapters 1-2) of Thinking in Systems (Meadows); and
Introduction and chapters 1-5 of The Power of Sustainable Thinking (Doppelt)

Week Two
• How we think—mental frames and automatic thoughts
• The “Iceberg”: events, historic patterns, systemic structures, and mental frames.
• Understanding feedback: reinforcing and balancing loops, causal-loop-diagrams
• The three phases of a sustainable thinking intervention

Reading assignment: Part II of Thinking in Systems (Meadows) chapters 3-5; and The
Three Phases of a Systems Thinking Intervention (sent by emailed from the Instructor)

Week Three
Phase 1 of a Sustainable Thinking Intervention: Framing the Question
• Determine if sustainable thinking can help resolve the problem
• Tell the story

Reading assignment: Part III of Thinking in Systems (Meadows) chapters 6-7

Week Four
Phase 1 (Continued)
• Diagram “Behavior Over Time”
• Create a focusing question

Reading assignment: Appendix of Thinking in Systems (Meadows): Summary of Systems
Principles, Springing the Systems Traps, Places to Intervene in a System, and Guidelines
for Living in a World of Systems.
Week Five
*Phase 2 of a Sustainable Thinking Intervention: Diagnosing the Problem*
- Diagram each theory of causal relationships separately
- Explore causal links and systemic structure through causal loop diagrams

Reading assignment: *Systems Archetypes* (sent by email from the Instructor)

Week Six
*Phase 2 (Continued)*
- Mid Term Exam
- Using ‘Systems Archetypes’ to Understand Systems Dynamics
- Create feedback loops
- Test your theories

Reading assignment: Chapters 6-7 in *The Power of Sustainable Thinking* (Doppelt)

Week Seven
*Phase 3 of a Sustainable Thinking Intervention: Develop and Test Interventions*
- Dig deeply to uncover the key choice points, underlying mental models, and personal responsibility
- Identify potential leverage points for change

Reading assignment: Chapter 8 in ‘*The Power of Sustainable Thinking*’ (Doppelt)

Week Eight
*Phase 3 (Continued)*
- Estimate how each intervention will play out over time, run experiments
- Get all stakeholders involved
- Preventing the return to linear thinking

Reading assignment: Chapters 9-11 in ‘*The Power of Sustainable Thinking*’ (Doppelt)

Week Nine
*Using sustainable thinking to motivate change in organizations, planning, public policy and other fields*
- General guidelines for motivating others to use sustainable thinking to alter their own or the behavior of others
- Getting started

Reading assignment: As assigned by instructor

Week Ten
- *Learning Group class role-plays*
- *Sharing of individual final reports*

Exam Week
*Final Exam*
# Written Report Grading Criteria

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