Stanford University
Department of Civil and Environmental Engineering

Prof. Leonard Ortolano
Winter Quarter, 2013-14

CEE171: ENVIRONMENTAL PLANNING METHODS
Administrative Details

Course Objectives:

The design and implementation of environmental policy is informed by both general concepts (particularly ideas from economics and philosophy) and practical analysis methods. This course introduces key concepts and provides opportunities to work with particular environmental planning methods. In addition to examining governmental environmental regulations, the course also considers private sector responses to government mandates. It recognizes that in the last few decades, many firms have gone beyond regulatory compliance and enhanced their environmental performance voluntarily. Thus the course also considers some of the ways in which firms are introducing environmental sustainability issues into their core business strategies.

Prerequisites:

CEE-70 or the willingness to read up on basic water and air quality indicators, such as biochemical oxygen demand.

The ability to solve basic problems involving Lagrange's Method of Undetermined Multipliers, a topic covered in Math 51.

Economics 1 is not essential, but if you have had it you will have an easy time with the parts of CEE171 that relate to environmental economics. If you have not had Econ 1 and you are interested in environmental planning and policy, then CEE171 may inspire you to work some economics into your schedule in the future.

Teaching Assistants:

Jordanna Deane, jdeane@stanford.edu (Coursework and all assignments except for 2 and 4)
Ryan Satterlee, rysatt@stanford.edu(Assignments 2, 4 and 8)

Readings:

All readings will be available on the Web at Coursework for CEE171 or provided by email. The book, *Environmental Regulation and Impact Assessment*, will also be available on course reserve in Terman Engineering Library at the Huang Engineering Center, 475 Via Ortega, Room 201, 2nd floor.

Homework Assignments

There will be eight homework assignments, and they are to be handed in at the beginning of the class period on the date they are due. Due dates will be indicated on the assignment sheets.

For late homework, there is both a cut-off date and grade penalty: one day late, 10% less; two days late, 20% less; and 3 days late, no credit. Exceptions will be made for extenuating circumstances provided the teaching assistant in charge of the assignment is informed by the time the assignment is due.

Some students may feel challenged by the word limits on essay assignments. As has often been noted, it is easier to write a long essay than a short one. These word limits serve a purpose. Environmental decision makers are often busy and they frequently rely on specialists who can express their ideas clearly and concisely.

This course has a closed-book final exam covering the entire course. You may bring into the exam a single sheet of paper (8-1/2"x11", both sides) containing review notes.

Laptops and Cell Phones

CEE 171 is built around student engagement in discussion, and, based on past experience, cellphone and laptop usage can be major distractions to students in class as well as the instructor. The format of the class relies on student participation and there is no need for wireless devices. Under the circumstances, please observe the following basic guidelines.

Cellphones -- During CEE 171, **cellphones should be turned off**.

In the event that a student anticipates an emergency call, please tell Professor Ortolano in advance, sit hear the exit, and place the phone on vibrate. If the student receives the emergency call, the procedure is simply to exit the class to take the call in a place that will not disturb other students in CEE 171 or nearby classrooms.

Texting at any time is prohibited in this class.

Laptops are not to be used during CEE 171 and they should have lids down. If a student feels that the inability to use a laptop will interfere with learning the CEE 171 material, he or she should discuss the matter in advance of class with Professor Ortolano so that suitable arrangements can be made.

Grading Formula:

	Points
Homework	150
Final Exam	150
Participation in class/oral presentations	50
TOTAL	350

Pass/No Credit Option:

You may, if you wish, be graded on the basis of the "pass/no credit" option. However, you must make the necessary arrangements for this by the date indicated in theStanford Academic Calendar, 2013-14 issued by the Office of the Registrar.

Time and Location:

Class times are Mondays, Wednesdays and some Fridays (as indicated on the course schedule below). All Friday sessions will in the same room, at the same time. Mon, Wed, Fri 3:15 PM - 5:05 PM at 50-52H. TA's will hold sessions to review course materials and assist with homework assignments; attendance at those sessions is optional and times are indicated on the course schedule.

All classes will be held in Building 50, Room 52H, and start at 3:15pm. Class sessions that are not taught by guests will end at about 4:30. Class sessions with guest speakers (noted on the course schedule below) will run until 5:05, and students should plan accordingly.

Informal meetings with guests: The class has several guest lecturers and each has considerable professional experience. Professor Ortolano invites all interested students in CEE 171 to join him and guest speakers for beverages and snacks at the Axe and Palm after the guests' sessions. These informal meetings provide students with an excellent chance to learn more about professional opportunities linked to environmental planning and policy. Note that one of our guests, Steve Johnson, will come to class three times and meet with students after his last session. At this last session, he will be joined by his colleague, Susan Rebellón, who was a TA in CEE 171 two years ago.

Prof. Ortolano's Office Hours:

Wednesdays between 1:30 and 2:45, and by appointment at other times on Monday afternoon: Room 249, Jerry Yang & Akiko Yamazaki Environment & Energy Building.

CEE171 Course Schedule

Wk	Day	Date	Topic	Reading
1	Mon	Jan. 6	Introduction -- Historical background: public health with focus on theories of disease transmission	Lecture outline—history of public health-- readings listed in Assignment No. 1
	Wed ---- Fri	Jan. 8 ---------- Jan. 10	Utilitarianism and Pareto Efficiency ---------- TA- session Jordanna Deane on	Coursework Ortolano, pp. 20-22, 108-114, 144-150; and lecture outline -- utilitarianism

			theories of disease transmission	
2	Mon	Jan.13	Efficient Levels of Pollution; Efficiency-Equity Tradeoffs	pp. 150-160, 169-176, Ch.2, especially pp. 24-27
	Wed	Jan 15 Assign 1 due—Historical perspectives	Water Pollution Control in the U. S.: Policy Instruments	Ortolano, Ch.12
	Fri Mon	Jan. 17 TA session -- TBA ---------- Jan 20	TA session (Ryan Satterlee) --Assign. 2 ---------- Martin Luther King Jr. Day – no class	
3	Wed	Jan 22 Assign. 2 Due Efficiency Calculations	Theory and Practice of Environmental Enforcement (Steve Johnson)	Steve JohnsonPPTplus negotiation homework materials
	Fri ------ TBA	Jan.24 ---------- TBA	Factors Influencing the Creation of Environmental Regulations ---------- TA session (Jordanna Deane) BEN Model tutorial	Lecture outline and Coniff, 2009, The Political History of Cap and Trade
4	Mon	Jan 27	Discharge Fee Programs	Ortolano, pp. 208-217
	Wed ____	Jan. 29 Assign No. 3 BEN Model (Jordanna Deane)	Tradable Pollution Permits Non-point Sources of Pollution and	Ortolano, pp. 221-232 and 238-243
	Fri	Jan. 31 or TBA	TA session (Ryan Satterlee)—Review of Optimization Procedures--Lagrange's Method	
5	Mon	Feb 3	EPA's Total Maximum Daily Load (TMDL) program	Nonpoint sources of pollution PPT and lecture outline
	Wed	Feb 5	EPA Perspectives on Enforcement (Fatima Tai and Jamie Marincola)	TBA
	Fri	Feb 7	TA session (Ryan Satterlee)—Assign. 4	
6	Mon	Feb. 10 Assign.4 Due – Water Quality Management Calculations	Introduction to Environmental Impact Assessment – (EIA, EIS, and NEPA)	Ch. 15, especially pp. 315--333 Class handouts on NEPA and CEQA. PPT -- EIA in the US

		(Ryan Satterlee)		
	Wed	Feb. 12	Introduction to Environmental Impact Assessment – (NEPA and CEQA) – continued Preliminary Negotiation: lecture ends at 4:15 and class ends at 5:05pm	Readings listed in Assignment 5
7	Mon	Feb.17	No class -- Presidents Day	
	Wed	Feb 19 Assign. 5 Due – EIA (Jordanna Deane)	Strategic Environmental Assessment - called "programmatic EIS" in the US Individual team meetings with Steve Johnson (industry) and Sam Brown (government). Lecture ends at 4:20 and class ends at 5:05pm.	PPT -- Strategic Environmental Assessment Readings listed in Assignment 7.
	Fri	Feb. 21	EIA in Practice—Rod Jeung and Sarah Bernstein Jones	Readings TBA
8	Mon	Feb. 24	Private sector self-regulation: Business case for corporate social responsibility	PPT and Readings TBA
	Wed	Feb. 26 Assign. 6(nothing to submit) Negotiation (Jordanna Deane)	Student Presentations – Final Negotiation of Enforcement Penalties. Sam Brown, Steve Johnson and Susan Rebellion	
9	Mon	March 3 Assign 7 Due—SEA (Jordanna Deane)	Cleaner production and eco-design	PPT and Readings TBA
	Wed	March 5	Environmental Management Systems and ISO 14, 001	PPT and Readings TBA
10	Mon	Mar. 10 Assign.8 Due - PowerPoint Presentations (JordannaDeane	Student PowerPointPresentations – Corporate environmental management	

		and Ryan Satterlee)		
	Wed	Mar. 12	Course Review Session (An additional pre-exam review session will be held by TAs – to be arranged)	

Assignment due dates:

1. Wed. 1/15 -- Historical perspectives essay
2. Wed. 1/22 -- Efficiency calculations
3. Wed. 1/29 -- BEN model calculations
4. Mon. 2/10 -- Water quality management calculations
5. Wed. 2/19 -- EIA questions
6. Wed. 2/26 -- Final negotiation
7. Mon 3/3-- SEA questions
8. Wed. 3/10 -- Corporate environmental management PowerPoint

Guest Speakers:

Guest speakers are listed below in an orderthat corresponds to when they will make presentations to our class.

Steve Johnson (Stanford alumnus) is an environmental engineer at the expert services firm of Gnarus Advisors LLC in its Menlo Park office. Steve's clients include industry, small businesses and public agencies for which he provides a variety of environmental services, including addressing environmental enforcement actions. Before joining Gnarus Advisors, he worked for LECG, LLC and Putnam, Hayes & Bartlett in a similar capacity. Steve also worked at USEPA Region 9 in staff and management capacities and then became an Assistant Director of the Arizona Department of Environmental Quality.

Susan Rebellón(Stanford alumna) works with Steve Johnson as an analyst at Gnarus Advisors LLC. She joined Gnarus after graduating in 2012 from Stanford with a M.S. degree in CEE-Environmental Fluid Mechanics and Hydrology and serving as a CEE 171 TA for two years. Susan was also a Stanford undergraduate, majoring in Earth Systems, Land Systems track. In her time at Gnarus, Susan has had the opportunity to work on cases involving penalties and negotiation for alleged noncompliance with environmental requirements, comparable to the simulated penalty negotiation exercise in this class. She has also worked on cases involving contaminated site investigation, cleanup, and cost recovery.

Fatima Ty joined the San Francisco (Region 9) office of USEPA in 2007. She has worked on Clean Water Act compliance and enforcement matters at various municipal wastewater facilities in the region. Prior to EPA, she worked at IBM and in environmental consulting (with Steve Johnson). She received her B.S. in environmental engineering from Cal Poly, San Luis Obispo and a Masters in public policy from the Goldman School of Public Policy at UC Berkeley.

Jamie Marincola(Stanford alumnus) started working at EPA in 2009 after getting his B.S. in biomechanical engineering at Stanford ('08). He is currently an NPDES Permit Writer and handles press duties for EPA Region 9 Water Division. At Stanford, he was an RA in Toyon and Larkin.

Sam Brown is Assistant Regional Counsel at the EPA Region 9 office and he leads investigations of regulated facilities for violations of federal environmental laws and pursues administrative and civil enforcement actions.In the context of enforcement, Sam conducts technical and legal case development; drafts administrative and civil complaints, consent decrees and other legal documents; and leads settlement negotiations to resolve violations. He has a BA from Michigan State University and a JD from Pace University School of Law in New York. He began working for EPA in 2007 and started in his current position in 2010.

Rod Jeung (Stanford alumnus), an expert in land use planning, has worked for many years in implementing the impact assessment process created by the California Environmental Quality Act. He managed the San Francisco regional office of EIP Associates before that firm was acquired by larger firms. He is currently a Principal in Design and Planning at the AECOM office in San Francisco.

Sarah Bernstein Jones (Stanford alumna) is the San Francisco Planning Department's Environmental Review Officer, responsible for oversight of implementation of the California Environmental Quality Act (CEQA) requirements for all private and public projects under the jurisdiction of the City and County of San Francisco. Prior to joining the San Francisco Planning Department in 2006, Sarah was in the County of Santa Clara Planning Office doing planning and environmental review for proposed development activities at Stanford. She holds a Master of City Planning degree from the University of California, Berkeley