ESR 588 Environmental Sustainability Fall 2008

Where: **SB2 Room 162, Portland State University**
When: **TR 10-11:50**
CRN: **11252, 4 credits**

Instructors: **Dr. Elise Granek** (725-4241; graneke@pdx.edu; office: Thurs 12-1 and by appt)
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Description: Sustainability in natural and human-influenced ecosystems, with a focus on processes of regeneration, maturity, collapse and renewal. Topic areas include natural processes of change in ecological systems, interactions among ecological and social systems, provisioning and valuation of ecosystem services, and ecosystem management.

Course outline:

Week	Lecture Topic
1-Tues (9/30)	AY: Change in ecological systems (White et al., pp 522-549)
1-Thurs (10/2)	AY: Change in ecological systems (White et al., pp 522-549)
2-Tues (10/7)	EG: Ecosystem services (MEA, Synthesis, pp 1-24, 39-49); **1-page essay #1 due**
2-Thurs (10/9)	AY: Elements of sustainability (Folke et al 2004)
3-Tues (10/14)	AY: Elements of sustainability (Hollings 2001; Allison & Hobbs 2004);
3-Thurs (10/16)	EG: Workshop: Governance and sustainability (Kearney et al. 2007) ; **Term paper title/description due**
4-Tues (10/21)	AY: Linking ecological and social systems (B&F, Chaps 1, 9, 14); **1-page essay #2 due**
4-Thurs (10/23)	EG: Ecosystem resilience and humans (B&F, Chaps 8 and 12)
5-Tues (10/28)	EG: Ecosystem services valuation (MEA, Ch 19; Samonte-Tan et al. 2007)
5-Thurs (10/30)	**Term paper abstract peer-review**
6-Tues (11/4)	AY: Ecosystem services valuation (Balmford et al 2002; Naidoo et al 2008; **1-page essay #3 due**
6-Thurs (11/6)	EG: Replacing ecosystem services? (Vassallo et al. 2007; Pauly 2007)
7-Tues (11/11)	EG: Course synthesis – elements of sustainability and review
7-Thurs (11/13)	**Mid-term exam**
8-Tues (11/18)	EG: Workshop: Sustainability case study and wrap up
8-Thurs (11/20)	**Student presentations**; **Written term paper due**
9-Tues (11/25)	**Student presentations**
9-Thurs (11/27)	*Thanksgiving holiday*
10-Tues (12/2)	**Student presentations**
10-Thurs (12/4)	**Student presentations**

Readings:

Clean Copy reader:

Allison, H.E. and Hobbs, R.J. 2004. Resilience, adaptive capacity, and the "lock-in trap" of the Western Australian agricultural region. ***Ecology and Society*** 9:3. [online] URL: http://www.ecologyandsociety.org/vol9/iss1/art3

Balmford, A., Bruner, A., Cooper, P., Costanza, R., Farber, S., Green, R.E., Jenkins, M., Jefferiss, P., Jessamy, V., Madden, J., Munro, K., Myers, N., Naeem, S., Paavola, J., Rayment, M., Rosendo, S., Roughgarden, J., Trumper, K. and Turner, R.K. 2002. Economic reasoning for conserving wild nature. ***Science*** 297: 950-953

Folke, C., Carpenter, S., Walker, B., Scheffer, M., Elmqvist, T., Gunderson, L. and Holling, C.S. 2004. Regime shifts, resilience, and biodiversity in ecosystem management. ***Annual Reviews of Ecology, Evolution and Systematics*** 35: 557-581.

Holling, C.S. 2001. Understanding the complexity of economic, ecological, and social systems. ***Ecosystems*** 4: 390-405.

Kearney, J., Berkes, F., Charles, A., Pinkerton, E. and Wiber, M. 2007. The role of participatory governance and community-based management in integrated coastal and ocean management in Canada. ***Coastal Management*** 35: 79-104.

Naidoo, R., Balmford, A., Costanza, R., Fisher, B., Green, R.E., Lehner, B., Malcolm, T.R. and Ricketts, T.H. 2008. Global mapping of ecosystem services and conservation priorities. ***Proceedings of the National Academy of Sciences*** 105: 9495-9500.

Pauly, D. 2007. The Sea Around Us project: documenting and communicating global fisheries impacts on marine ecosystems. ***Ambio*** 36: 290-295.

Samonte-Tan, G.P.B., White, A.T., Tercero, M.A., Diviva, J., Tabara, E. and Caballes, C. 2007. Economic valuation of coastal and marinie resources: Bohol Marine Triangle, Philippines. ***Coastal Management*** 35: 319-338.

Vassallo, P., Bastianoni, S., Beiso, I., Ridolfi, R. and Fabiano, M. 2007. Emergy analysis for the environmental sustainability of an inshore fish farming system. ***Ecological Indicators*** 7: 290-298.

White, I.D., Mottershead, D.N. and Harrison, S.J. 1992. ***Environmental Systems: An Introductory Text***. 2nd edition, Chapman and Hall, New York, N.Y., (Chapter 25, pp 522-549).

Text book:

Berkes, F. and Folke, C. (eds.) 1998. ***Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience***. Cambridge University Press, Cambridge, U.K. (Chapters 1, 8, 9, 12, 14)

Electronic articles:

Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC. (selected pages) (available on WebCT at http://psuonline.pdx.edu/)

Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being: Current State and Trends. Island Press, Washington, DC. (Ch 19; available at http://psuonline.pdx.edu/)

Class components:

Please see lecture topic list (above) for specific reading assignments. At the beginning of weeks 2, 4, and 6, a one page essay will be due at the beginning of the Tuesday class period *addressing the readings assigned that coming week*. The essay should be typed, double-spaced and no more than one page long. Essays should NOT be a summary of the reading(s), but rather an opinion/editorial piece on some aspect of the reading.

Please note that participation levels within in-class discussions will be assessed! The major product of the class will be a term paper, with both abstract and oral components graded, in part, by peer-review.

Grade distribution:

Term paper (50%), Mid-term exam (25%); Vocal participation in class and workshops, Essays, Attendance, (25%).

Term paper components:

Abstract review (25%), Oral presentation (25%), Written paper (50%).