

ESP 801

Physical, Chemical & Biological Processes of the Environment: A Systems Perspective

Schedule: MWF 1:00 – 2:00, 273 Giltner Hall (some additional time required for field/lab activities). Modeling labs will be in 26 Student Services typically on Fridays

Instructors:

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Day	Date	Topic
1	27 Aug.	Course introduction: a framework for environmental science
2	29 Aug.	Systems science: system behavior & responses
3	31 Aug.	Systems modeling: an introduction to Stella
4	3 Sept.	<i>Labor Day – no class</i>
5	5 Sept.	Environmental Issues in Romania
6	7 Sept.	Systems modeling: an introduction to Stella
7	10 Sept.	Understanding Earth's dynamic systems: a framework for environmental change & environmental problems
8	12 Sept.	Human health & ecological risk assessments: frameworks for environmental protection
9	14 Sept.	Discussion: Topic to be decided
10	17 Sept.	Systems science: mass balance techniques
11	19 Sept.	Physical systems: flow, mixing and transport
12	21 Sept.	Systems modeling: chloride cycling in the Great Lakes
13	22 Sept.	Chemical systems: stoichiometry
14	26 Sept.	Chemical systems: equilibrium
15	28 Sept.	Discussion: Topic to be decided
16	1 Oct.	Chemical systems: kinetics
17	3 Oct.	Hydrospheric systems: lakes & eutrophication
18	5 Oct.	Systems modeling: phosphorous cycling in a lake
19	8 Oct.	Environmental policy: an environmental science perspective
20	10 Oct.	Environmental isotopes: a tool to examine environmental systems
21	12 Oct.	Discussion: Overview term paper, ppt, mid term, semester to date

22	15 Oct.	Biologic systems: energy flow & classifications I
23	17 Oct.	Practical 1: Days 1 -19
24	19 Oct.	Systems modeling: the Mono Lake problem
25	22 Oct.	Biologic systems: energy flow & classifications II
26	24 Oct.	Biologic systems: niches & biodiversity through time
27	26 Oct.	Systems modeling: Logistic growth and predator-prey relationships
28	29 Oct.	Impacts and management of municipal wastewater
29	31 Oct.	Hydrospheric systems: water and it properties
30	2 Nov.	Systems modeling: Oxygen depletion in a river
31	5 Nov.	Hydrospheric systems: water quality in rivers
32	7 Nov.	Hydrospheric systems: groundwater quality
33	9 Nov.	Systems modeling: The global carbon cycle
34	12 Nov.	Atmospheric systems: climate and climate change
35	14 Nov.	Atmospheric systems: origin, fate & effects of air pollutants
36	16 Nov.	Discussion: Topic to be announced
37	19 Nov.	Lithospheric systems: mineral & energy resources & the environment
38	21 Nov.	<i>Thanksgiving holiday – no class</i>
39	23 Nov.	<i>Thanksgiving holiday – no class</i>
40	26 Nov.	Solid and hazardous waste management
41	28 Nov.	Remediation, restoration & reuse of contaminated sites
42	30 Nov.	Understanding the system for chromium contaminated wetland
43	3 Dec.	Student presentations
44	5 Dec.	Student presentations
45	7 Dec.	Student presentations
	xx Dec	Practical 2: Days 20 - 42

Grading: 2 practicals @ 25% each
1 term paper & PowerPoint presentation @ 30%
homework, field/lab exercises, field trip & class participation @ 20%

Readings: Readings to support information given in lectures will be posted on Angel.

Work outside of class: There will be one local field trip and possibly an exercise that will involve taking environmental samples and laboratory analyses.

