

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	Assign	Due
1	Sept 2	No class		
2	4	No class		
3	7	No class		
4	9	Course introduction, discussion of domain of environmental science	HW1: Def'n of environmental science	
5	11	Overview of earth systems science and environmental engineering		
6	14	Basic mass balance concepts		
7	16	System behavior and responses		
8	18	Introduction to Stella modeling (meet in 26 Student Services)	HW2: Intro to Stella; Great Lakes Diversion reading	HW1
9	21	Flow and transport processes		
10	23	Water resources: quantity		
11	25	Discussion: Great Lakes Diversions		Be prepared for discussion
12	28	Understanding Earth's dynamic systems: a framework for environmental change		
13	30	Stoichiometry		
14	Oct 2	Presentation of Great Lakes chloride exercise (meet in 26 Student Services)	HW3: Great Lakes chloride cycling; P ban reading	HW2
15	5	Water resources: quality		
16	7	Lakes and eutrophication		
17	9	Discussion of P ban		Be prepared for discussion

18	Oct 12	Understanding Earth's evolution: a framework for environmental problems		
19	14	Biosphere systems I		
20	16	Presentation of P model exercise	HW4 P model	HW3
21	19	Biosphere systems II		
22	21	Predator-prey relationships		
23	23	Discussion: exotic species		Be prepared for discussion
24	26	Kinetic processes and models		
25	28	Water quality modeling in rivers		
26	30	Wastewater treatment, presentation of river DO model exercise	HW5 DO model; Hg reading	HW4
27	Nov 2	Equilibrium as unifying principle		
28	4	Behavior of metals in the environment		
29	6	Discussion: Hg in the environment	Mono lake reading	Be prepared for discussion
30	9	Behavior of organics in the environment		
31	11	Overview of environmental policy		
32	13	Discussion: Mono Lake		Be prepared for discussion
33	16	Environment and health		
34	18	Human health and ecological risk assessment		
35	20	Presentation of Mono Lake exercise (meet in 26 Student Services)	HW6: Mono Lake model	
36	23	Air Pollution		
37	25	No class		
38	27	No class		
39	30	Climate systems		
40	Dec 2	Modeling global carbon cycle		
41	4	Discussion: environmental ethics		HW 6; Be prepared for discussion
42	7	Term project presentations		
43	9	Term project presentations		
44	11	Term project presentations		

Grading: Homework 25%
Participation in class discussions 25%
Term paper 35%
Final presentation @ 15%