L19 EPSc 308 Topics in Environmental Sustainability
Professor William Hayden Smith
1.5 hour sessions twice weekly; M, F Rudolph Hall
Course Objective: To develop a realistic understanding of sustainability in the context of the finite Earth ecology and climate system.
Prerequisites: Physics 117/118 or Chemistry 111/112 or permission of instructor
Textbook: "Sustainable Energy — Without the Hot Air" D. MacKay. 2007

Order of Chapters: added by WHS for numerical and technical assessment
1 Motivation ........................................
2 The balance sheet ..............................
3 Cars ..............................................
4 Wind .............................................
5 Plane travel ....................................
6 Solar travel .....................................
7 Heating and cooling ............................
8 Hydroelectric ...................................
9 Light .............................................
10 Offshore wind .................................
11 Gadgets ........................................
12 Wave ...........................................
13 Food and farming .............................
14 Tide .............................................
15 Stuff ............................................
16 Geothermal ....................................
17 Public services ...............................
18 Can we live on renewables? .............
0. Making a difference .......................
19 Every BIG helps ..............................
20 Better transport ..............................
21 Smarter heating ..............................
22 Efficient use of electricity ...............
23 Sustainable fossil fuels? ............... I Sustainable fossil fuels; is that possible?
24 NuclearEnergy ............................... O. Nuclear Breeders, etc. are a part of the future...?
25 Living on other countries’ renewables .
26 Fluctuations and storage ................ P. Europe imports energy to avoid using her own?
27 Energy plans for Britain ................. Q. Numbers for backup/storage...
28 Putting costs in perspective ............ R. Energy Plans for America
29 What to do now ..............................
30 Energy plans for Europe and the World N. The aggressive Japanese energy plan for 2050.

Grading structure and criteria:
Two written take-home examinations and problems will be given. Makeup exams to be given only for absences due to documented illnesses or family emergencies. Exam material will be derived entirely from the lecture content. Extra credit may be given for pop quizzes and documentary essay reviews.
Grades: 70 = C, 80 = B, AND 90 = A, WITH 0-3 - , 4-6 Ø, 7-9 - ., Pass-Fail/Credit-No credit >70%.
Attendance: Attendance is compulsory. Two unexcused absences per semester are permitted. All further absences require your instructor’s approval in advance or a doctor’s note. Each unapproved absence results in one-half grade step penalty (i.e. A to A-).
IMPORTANT: The class procedures and rules contain, by reference, all rules pertaining to the Washington University student manual, the faculty manual, and all other pertinent rules for class activities and behavior.
OFFICE HOURS
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