

**FLORIDA INTERNATIONAL UNIVERSITY**  
**Department of Environmental Studies**

**EVR 3010 Energy Flow**  
**SPRING 2009**

**Course Objective**

The course is designed to acquaint students with the principles of energy flow in the environment and will focus on introduction to the physical science principles and concepts needed to understand energy issues. It will also examine energy use and efficiency, current energy sources, environmental impacts of energy use, climate change and energy, and future renewable energy alternatives.

Prerequisites: EVR 3011 (or another general environmental science course) and College Algebra.

Location: GC 278B

Time: TR 9:30 - 10:45

Instructor: Assefa M. Melesse

Office: ECS 339

Tel. (305) 348-6518

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Office Hours: TR 1:00-3:00 PM

Required Text: Energy and Environment, 2<sup>nd</sup> Edition/ Ristinen

Additional references: Energy: Its use and the Environment, 4<sup>th</sup> edition, Hinrichs

**Grading:**

Attendance	5%
3 Exams	35 %
3 Home works	40 %
Group presentation	20%
Current topics on energy and the environment	Bonus

A	90-100
B+	88-89
B	80-87
C+	78-79
C	70-77
D+	68-69
D	55-67
F	<55

**NOTE:**

- Students are required to attend classes regularly.
- Late homework submission will be subjected to penalty.
- Six groups will be formed for the group presentation and discussion on current topics of energy and environment outlooks. There will be 25 minutes allotted per group presentation and discussion. No final paper.
- Topics of group presentation will be decided together as we go through the course.

On Tuesdays we will have discussions for the first 10 minutes on issues around energy and environment that are in the news. One student will lead the discussion and bonus points are given for leading the discussion and participation. Every Thursday one student will be assigned or volunteer to lead the coming Tuesday discussion.

### COURSE OUTLINE

LEC/ DATE	TOPICS	<u>RISTINEN (HINRICHS)</u>
1 Jan. 6	Course overview Introduction: Energy and environment, trends in energy usage and availability	<u>CH 1.1 &amp; 1.2, 1.6</u> (CH.1)
2 Jan. 8	Energy Fundamentals: Energy basics	<u>CH 1.3-1.5</u> (CH. 2)
3 Jan. 13	Work-Energy-Power	<u>CH 1.3-1.5</u> (CH. 2)
4 Jan. 15	Conservation and exchange of energy	<u>CH 1.7 &amp; 1.8</u> (CH. 3) <b>HW1</b>
<b>JANUARY 19: MLK HOLIDAY</b>		
5 Jan. 22	Global energy outlook: Long-term supply and demand	www.doe.gov/eia <b>HW 1 Due</b>
6 Jan. 27	Electric Energy and Power Hw 1 discussion	(CH 10 & 11)
7 Jan. 29	Exam 1 (Lecture 1-6)	
8 Feb. 3	Fossil Fuels	<u>CH 2</u> (CH 7)
9 Feb. 5	Fossil fuels	<u>CH 2</u> (CH 7)
10 Feb. 10	Exam 1 discussion	
11 Feb. 12	Energy Efficiency and conservation	<u>CH 7</u> (CH 5)
12 Feb. 17	Thermodynamics, heat engines, heat pumps and refrigerator	<u>CH 3</u> (CH 4) <b>HW 2</b>
13 Feb. 19	Air pollution, Automobile & Environment	<u>CH 9</u> (CH 8)
14 Feb. 24	Acid rain	<u>CH 9.10</u> (CH 9)
15 Feb.26	Ozone depletion and greenhouse effect	<u>CH 10</u> (CH 9) <b>HW 2 Due</b>
16 Mar. 3	Global Warming, Mitigation & Policy Hw2 discussion	<u>CH 10</u> (CH 9)
17 Mar. 5	Exam 2 (Lecture 8-16)	
18 Mar. 10	Nuclear Energy and Nuclear Power	<u>CH 6</u> (CH 13, CH14, CH 16)
19 Mar. 12	Exam 2 discussion	
<b>SPRING BREAK MARCH 16-21</b>		

20 Mar. 24	Hydroelectric, Geothermal Energy	<u>CH 5.2, 5.8</u> (CH 12, CH 18) <b>HW 3</b>
21 Mar. 26	Solar Energy	<u>CH 4</u> (CH 6, CH 12)
22 Mar. 31	Solar Electricity	<u>CH 4</u> (CH 12)
23 Apr. 2	Wind Energy, Hydrogen	<u>CH 5.3</u> <b>HW 3 due</b>
24 Apr. 7	Biomass Energy HW3 discussion	<u>CH 5.7</u> (CH 17)
25 Apr. 9	Group presentation (Group 1-3)	
26 Apr. 14	Group presentation (Group 4-6)	
27 Apr. 16	Exam 3 (Lec. 18-24)	