



PHYS 1211

Energy and Environmental Physics

Energy is one of the most fundamental concepts in science. But increasingly, issues relating to energy are also coming to the forefront of the political and public agenda. Climate change and our response to it, “peak oil”, and the world food crisis, are all issues resulting from the problems of supplying the energy needs of a growing world population.

This course will look at the science behind these important issues. The laws of Physics say many important things about energy, from its overall conservation, to the modes by which it can be converted from one form to another, and the limits on the efficiency of these processes. The course will look at the primary sources of energy available for human use and some of the environmental impacts of this use.

One of the best-known impacts is that of global warming. This arises primarily because of a change in the energy balance of the Earth’s atmosphere due to greenhouse gases produced by fossil fuel burning. We will look at the current understanding of this process and the changes that will be needed in the future to prevent dangerous climate change.

The course will look at alternative energy sources that can replace fossil fuels. However, some of the more environmentally friendly energy sources have their own problems. Why has the promise of solar energy taken so long to be realized? Does nuclear energy have a future that is better than its past? How can science properly influence public/economic policy on energy?

Anyone with an interest in the environment and its protection will enjoy this course. Energy issues are likely to effect us all in the future, and this course will provide the background we need to make informed choices.

