



DEPARTMENT OF ECONOMICS

**ECON 440 Special Topic: Advanced Natural Resource Economics**

Semester 2 (18 points), 2011



## Course Information for 2011

### ***Prerequisites***

ECON 371  
(ECON 207 and ECON 312 are useful papers but are not essential)

### ***Lecture times***

To be announced

### ***Venue***

To be announced

### ***Paper co-ordinator***

Viktoria Kahui  
7.18 Commerce Building, Tel. (479) 5278  
[Viktoria.Kahui@otago.ac.nz](mailto:Viktoria.Kahui@otago.ac.nz)

I have no fixed office hours. Drop in if I am around; alternatively arrange an appointment by email.

### ***Workload***

This is an 18-point semester paper corresponding to approximately an average workload of 12 hours per week under the University's conventions (including the examination period). As the course only has two contact hours per week, you are expected to spend considerable time outside of class studying for this course.

### ***Learning aims and objectives***

The objective of ECON 440 is to promote an understanding of the economic concepts underlying the use and misuse of natural resources. There is a strong focus on renewable natural resources (i.e. primarily fishery resources), but we will also deal with non-renewable resources and natural resource valuation. Most of the material, especially for the first part of the course, focuses on the mathematical modelling of renewable resources (bioeconomic modelling). However, my aim is to balance the modelling it with interesting applications. At the end of the course students will be able to model natural resource utilization mathematically, understand the issues arising from key economic parameters and relate these models to current issues.

### **Assessment**

Assignment	15%
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Mid-semester test	35%
End-semester test	35%

Plussage does not apply.

The assessment for ECON440 is internal. There is no exam. Your assessment consists of two assignments, which I will hand out in class, and two tests administered in class, each 1 hour and 50 minutes long. Further guidelines will be provided in class.

### **Readings**

My slides will be available on blackboard shortly before each lecture. At the beginning of each lecture I will hand out copies of the relevant readings (spares will be available in a box in front of my office should you miss a lecture). A large part of the course will focus on Clark (1990), while Hartwick & Olewiler (1998) and Tietenberg (1984) are useful for further reference. All three books will be on close reserve at the library.

- Clark, C.W. (1990). Mathematical Bioeconomics: the optimal management of renewable resources. New York: J. Wiley.
- Hartwick, J.M. and N.D. Olewiler (1998). The Economics of Natural Resource Use. Reading, Mass.: Addison-Wesley.
- Tietenberg, T.H. (2006). Environmental and Natural Resource Economics. Boston: Addison Wesley/Pearson.

### **Course outline**

1. Renewable resource population dynamics
2. Open access harvesting
3. Dynamic optimization of the harvest rate
4. Understanding the Golden Rule of fisheries and an application to elephants
5. Fisheries policies and the ITQ system in New Zealand
6. Multispecies modelling and the problem of sea lion bycatch
7. Forestry
8. Mining depletable resources
9. Hartwick-Solow rule and intergenerational equity

(these topics may change slightly depending on how fast we cover the material)