

## **FRE 523 (1.5) Resource Economics I**

### **Course Outline**

Class Time: TBD

Room: TBA

#### **Description**

In this course, we examine the interdependence between our economies and natural ecosystems. We analyze resource extraction, depletion, protection and management in the context of fisheries and aquaculture. We focus on the efficiency of economic decision-making and the deviations from efficient outcomes, commonly observed in these contexts. We also discuss the causes of these failures, and use an analytical framework to examine the choices faced by individuals, firms, policy-makers and decision-makers to correct these failures.

#### **Learning Objectives**

1. Identify inefficiencies arising from “open access” natural resources.
2. Build a capital based framework to analyze the optimal exploitation of the natural resource.
3. Identify the specific economic dynamics influencing use of trans-boundary aquatic resources.
4. Identify the production, and non-market interactions between wild and farmed fisheries.
5. Use the course framework to analyze fishery policies in terms of their market and non-market costs and benefits.
6. Gain knowledge of, critique, and evaluate local and topical fishery issues.

#### **Instructors**

*Fisheries (Part One) – Gordon Munro*

Email: [gordon.munro@ubc.ca](mailto:gordon.munro@ubc.ca)

Office Hours: To be announced.

*Fisheries and aquaculture (Part Two) – Rashid Sumaila*

Email: [r.sumaila@fisheries.ubc.ca](mailto:r.sumaila@fisheries.ubc.ca)

Office Hours: To be announced.

#### **Prerequisite**

FRE 502: Food Market Analysis or FRE 501: Commodity Markets and Price Analysis

#### **Class Format**

6 lectures of 3 hours, once a week for 6 weeks.

#### **Course Requirements**

Your grade shall be determined as follows:

<b>Exams and Problem Sets</b>	<b>Date</b>	<b>Percent of Grade</b>
Two assignments	To be announced.	50 percent
Exam	At the end of week seven.	40 percent
Class Participation	Contributions to class discussions.	10 percent

### Assignments

The assignments will consist of one problem set and one short essay. The problem set will require the students to build a framework to analyze the optimal exploitation of the natural resource and to analyze fishery policies in terms of their market and non-market costs and benefits. The short essay will allow the students to gain knowledge of, critique, and evaluate local and topical fishery issues.

### Exam

Students will take one exam covering the fisheries section. The exam will last 120 minutes, and will be comprehensive (will cover both sections). You must take the exam at the scheduled time unless you have another exam at the same time, serious illness, or an emergency. You must validate with documentation the reason(s) why you will be unable to take any exam. There shall be two assignments.

### Class Participation

The class participation grade depends on your contribution to class discussions. All contribution is appreciated, even asking questions to clarify previously taught material. The sole aim of assigning a participation grade is to encourage active learning for everyone. The instructors will assign the class participation grade.

### **Academic Dishonesty**

Please review the UBC Calendar “Academic regulations” for the university policy on cheating, plagiarism, and other forms of academic dishonesty. **Academic dishonesty will be dealt with very seriously in this course.**

### **Online Course Material**

Available at Connect: <http://www.connect.ubc.ca>. You are required to regularly login to your course page for FRE 523. Your syllabus, course-lecture slides, additional material, announcements, assignments, and grades will be available on Connect.

### **Course Outline and Readings**

How to use this course outline: This outline is a collection of papers, and topics commonly taught in resource economics. Wherever possible a stable link to the paper is provided. While some of these links will work anywhere, many of them are digitally protected requiring a subscription. You can access this material by logging in through your account at the UBC library, or on any computer connected via Ethernet on the UBC network. For some articles no link is provided, in that case, please search for the article (if you search via the UBC library you will find access to its electronic version).

### **Tentative Lecture Schedule (to be finalized)**

Week 1	<p><i>Fisheries (Gordon Munro)</i>: The economics of fisheries: The traditional static approach (overview of Canadian fishing industry, concept of bioeconomics, fisheries as a ‘common pool resource’, concepts of resource rents and bioeconomic equilibrium, weakness in the static approach)</p> <p><u>Readings</u></p> <ul style="list-style-type: none"> <li>• Chapter 4: J.M Hartwick and N.D. Olewiler, <i>The Economics of Natural Resource Use</i>, 2<sup>nd</sup> Edition</li> <li>• G. Munro, “Mathematical Bioeconomics and the Evolution of Modern Fisheries Economics”, <i>Bulletin of Mathematical Biology</i>, vol. 54, issue 2/3, p. 163ff, go to: <a href="http://www.sciencedirect.com/science/journal/00928249/54/2-3">http://www.sciencedirect.com/science/journal/00928249/54/2-3</a></li> <li>• Ola Flaaten, <i>Fisheries Economics and Management</i>, Chapter 3, Parts 3.1 and 3.2; Chapter 5, Parts 5.1 to 5.3, go to: <a href="http://www.ub.uit.no/munin/bitstream/handle/10037/2509/book.pdf?sequence=1">http://www.ub.uit.no/munin/bitstream/handle/10037/2509/book.pdf?sequence=1</a></li> </ul>
Week 2-3	<p><i>Fisheries (Gordon Munro)</i>: The economics of fisheries: Capital theoretic approaches (social rate of discount, dynamic perception of the ‘common pool’ problem, ‘existence value’)</p> <p><u>Readings</u></p> <ul style="list-style-type: none"> <li>• Chapter 11: J.M Hartwick and N.D. Olewiler, <i>The Economics of Natural Resource Use</i>, 2<sup>nd</sup> Edition.</li> <li>• Ola Flaaten, <i>Fisheries Economics and Management</i>, Chapter 4, Chapter 5, Parts 5.4, go to: <a href="http://www.ub.uit.no/munin/bitstream/handle/10037/2509/book.pdf?sequence=1">http://www.ub.uit.no/munin/bitstream/handle/10037/2509/book.pdf?sequence=1</a></li> </ul>
Week 4	<p><i>Fisheries (Rashid Sumaila)</i>: Game-theoretic approaches to the management of shared resources (methods for analyzing strategic choices among agents who share a common fish stock)</p> <p><u>Readings</u></p> <ul style="list-style-type: none"> <li>• Binmore, K. (1992). <i>Fun and games: A text on game theory</i>. D.C. Heath and Company. Toronto. Chapter 1, 1-21.</li> <li>• Munro, G.R. (1979). The Optimal Management of Transboundary Renewable Resources. <i>The Canadian Journal of Economics</i>, 12, 355 - 376.</li> <li>• Vislie, J. (1987). On the Optimal Management of Transboundary Renewable Resources: A Comment on Munro's Paper. <i>The Canadian Journal of Economics</i>, 20, 870 - 875.</li> <li>• Munro, G.R. (1987). The Management of Shared Fisheries Resources under Extended Fisheries Jurisdiction, <i>Marine Resource Economics</i>, 3, 271-96.</li> <li>• Sumaila, U.R. (1999). A review of game theoretic models of fishing. <i>Marine Policy</i>, 23(1), 1-10.</li> </ul>

Week 5	<p><i>Fisheries (Rashid Sumaila)</i>: Topical issues in fisheries: Modelling and quantification (Fisheries subsidies: types, magnitude, and impacts on resource sustainability; Illegal, unreported, unregulated (IUU) fishing: scope, magnitude, stock sustainability effects and the economic incentives facing IUU fishers)</p> <p><u>Readings</u></p> <ul style="list-style-type: none"> <li>• Clark, C.W., G. Munro and U.R. Sumaila (2005). Subsidies, buybacks, and sustainable fisheries. <i>Journal of Environmental Economics and Management</i>, 50, 47-58.</li> <li>• Munro, G. and U.R. Sumaila (2002). The impact of subsidies upon fisheries management and sustainability: The case of the North Atlantic. <i>Fish and Fisheries</i>, 3, 233-290.</li> <li>• Becker, G. (1968). Crime and punishment: An economic approach, <i>Journal of Political Economy</i>, 76( 2), 169-212.</li> <li>• Sumaila, U.R., J. Alder and H. Keith (2006). Global scope and economics of illegal fishing. <i>Marine Policy</i>, 30(6), 696-703.</li> <li>• Sumaila, U.R., D. Marsden, R. Watson and D. Pauly (in press). Global Ex-Vessel Fish Price Database: Construction, Spatial and Temporal Applications. <i>Journal of Bioeconomics</i>.</li> <li>• Sumaila, U.R. and C. Walters (2005). Intergenerational discounting: A new intuitive approach. <i>Ecological Economics</i>, 52, 135-142</li> </ul>
Week 6	<p><i>Fisheries (Rashid Sumaila)</i>: Main topics related to aquaculture (production function analysis, externalities, economic analysis of different production systems, local cases)</p> <p><u>Readings</u></p> <ul style="list-style-type: none"> <li>• Asamoah, E.K., Nunoo, F.K.E., Osei-Asare, Y.B., and Sumaila, U.R. (2012). A production function analysis of pond aquaculture in Southern Ghana. <i>Aquaculture Economics &amp; Management</i> 16(3), 183-201, go to: <a href="http://www.tandfonline.com/doi/abs/10.1080/13657305.2012.704616">http://www.tandfonline.com/doi/abs/10.1080/13657305.2012.704616</a></li> <li>• Liu, Y. and Sumaila, U.R. Estimating Pollution Abatement Costs of Salmon Aquaculture: A Joint Production Approach (2010) <i>Land Economics</i>, 86, 569 – 584, go to: <a href="http://le.uwpress.org/content/86/3/569.short">http://le.uwpress.org/content/86/3/569.short</a></li> <li>• Liu, Y. and Sumaila, U.R. (2007) Economic analysis of netcage versus sea-bag production Systems for salmon aquaculture in British Columbia. <i>Aquaculture Economics and Management</i>, 11:413–437, go to: <a href="http://www.fisheries.ubc.ca/node/3915">http://www.fisheries.ubc.ca/node/3915</a></li> <li>• Sumaila, U.R., Volpe, J.P., and Liu, Y. (2005). Ecological and economic impact assessment of sablefish aquaculture in British Columbia. <i>Fisheries Centre Research Report</i> 13(3), pp. 33, go to: <a href="http://www.fisheries.ubc.ca/node/3915">http://www.fisheries.ubc.ca/node/3915</a></li> </ul>