

**UNIVERSITY OF COLORADO AT BOULDER
DEPARTMENT OF ECONOMICS, SPRING 2007
NATURAL RESOURCE ECONOMICS, Econ 4535-001**

Dorfman and N. Dorfman, W.W. Norton & Company, New York, 1993, pp.162-178)

3. GROUND WATER, SURFACE WATER ALLOCATION AND BENEFIT-COST ANALYSIS – Feb 7, 9, 12, 14
Safe Yield Use Principle of maintaining water table in aquifers, optimal rate of depletion of aquifers
Equi-marginal principle of allocating surface water – mathematical derivation and graphical model, scarcity rent of water, marginal user cost, and marginal cost pricing of water
Assignment #4 due Feb 14: Mathematically derive the equi-marginal principle and interpret
Benefit-cost analysis of water development projects – B/C ratio, NPV, IRR, Payback Period, incremental analysis for mutually exclusive projects

MIDTERM 1: FEB 16, FRIDAY

4. TIMBER HARVESTING MODEL – Feb 19, 21, 23, 26
Growth characteristics of timber, stumpage value, the MAI rule of harvesting
Net present value from timber harvesting, Single Crop Optimal Harvesting Period – mathematical derivation, graphical representation, and interpretation

Basis for Option, Discovery and Existence Values: Uncertainty, Lack of Information and Possible Irreversible Consequences (Measures of Caution), Non-human value – the difference between economic value and environmental value

Short introduction to techniques of estimating values – hedonic price method, travel cost method, contingent valuation method

MIDTERM 2: MARCH 21, WEDNESDAY

7. DISCUSSION ON ENERGY RESOURCES – Mar 23, Apr 2, 4

Trend of oil prices, reasons, and inferences

Presentations by students writing on energy resources

Assignment #8 due Mar 23: Write a summary of the following reading

Energy Resources - Cornucopia or Empty Barrel? by Peter McCabe, the American Association of Petroleum Geologists, 1998

Warehouse concept of reserves, Resource Pyramid, Closed model and Open model, Theoretical production and price trends

8. DISCUSSION ON COLORADO RIVER COMPACT, WATER RIGHTS MARKET, AND MUNICIPAL WATER SCARCITY – Apr 6, 9, 11

Presentations by students writing on water issues

Assignment #9 due Apr 6: write a summary of the following readings

Economic Analysis of Groundwater Use in Douglas County, by Paul Flack, 2005

Average cost pricing vs. marginal cost pricing, Practice of tap fees, Price vs. watering restrictions for conservation of water

Colorado River Compact and Water Rights Market

9. DISCUSSION ON FORESTRY RESOURCES – Apr 13, 16, 18

Presentations by students writing on forest management and forestry issues

Assignment #10 due April 13: write a summary of the following reading

Free Market Forestry, by Mark Muro, from the Denver Rocky Mountain News, Sunday, June 1, 1997, pp. 1B

Forestry issues: roadless and wilderness v. roaded, protection against wildfire and invasive species, timber management v. multiple use management, below-cost timber sales, allowing participation of environmental activist organizations in bidding fo.56 Tm(8.)Tj/fB

Economic Incentives and Poaching of the One-Horned Indian Rhinoceros in Nepal, from the Poverty Reduction and Environmental Management No. 1, Jan 2005

11. POPULATION, ENVIRONMENT, TRENDS OF RESOURCE SCARCITY, AND SUSTAINABILITY – April 27, 30, May 2, 4

Neo-Malthusian Perspective on Population, Economic model of family size, Modern theory of demographic transition, Mutual relationship between economic growth and population growth, Impact of population growth on environment – downward spiral hypothesis, induced innovation hypothesis, Ecological perspectives and Ecological Economics

Assignment #13 due May 2: write a summary of the following reading

Sustainability - An Economist's Perspective, by Robert Solow, from Economics of the Environment, Selected Readings, 3rd edition, edited by R. Dorfman and N. Dorfman, W.W. Norton & company, 1993, pp. 179-187

John Rawl's sustainability principle of nondeclining welfare, Solow-Hartwick sustainability rule of nondeclining capital, Issue of Substitutability of Natural Capital with Manmade Capital, Weak Measure of Sustainable Development, Strong Measure of Sustainable Development, Empirical Findings on Sustainable Development in Selected Countries, Safe Minimum Standard of Use (SMS), Daly's Steady-State Principles

Assignment #14 due May 4: write a summary of the following reading

Trend of Natural Resource Commodity Prices, by Margaret Slade, from Journal of Environmental Economics and Management

Trends of Economic Scarcity – Price, marginal extraction cost, and rent, Factors Mitigating Scarcity, Recent findings in the literature

FINAL EXAM (CUMULATIVE): MAY 7 MONDAY AT 10:30 A.M.

Accommodations for Students with Documented Disability

If you qualify for accommodations because of a disability, please submit a letter to me from Disability Services in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. Contact 303-492-8671, Willard 322, or www.Colorado.EDU/disabilityservices.

Absences due to Religious Observances

Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. If you have any such conflict, please inform the instructor at least two weeks in advance to make a reasonable arrangement or adjustment according to the University policy, which can be seen at http://www.colorado.edu/policies/fac_relig.html.

Classroom Behavior Policy

Students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to behavioral standards may be subject to

discipline. Faculty have the professional responsibility to treat students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which students express opinions. See policies at <http://www.colorado.edu/policies/classbehavior.html> and at http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code.

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All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Additional information on the Honor Code can be found at <http://www.colorado.edu/policies/honor.html> and at <http://www.colorado.edu/academic/honorcode>.