RD 320 - RESOURCE MANAGEMENT AND PLANNING

COURSE SYLLABUS

FALL SEMESTER, 2005
Tuesday and Thursday, 10:20 - 11:40
Room 223 Natural Resources Building

CATALOG DESCRIPTION:
Use and management of natural resources. Review of concepts, principles, and objectives of resource management and planning. Concepts of human population dynamics, resource supply and demand, environmental impacts and suitability assessment for sustainable development.

INSTRUCTOR: Dr. Gerhardus Schultink, Professor
Department of Resource Development, 310 Natural Resources
(353-1903. E-mail: schultin@msu.edu)
Office Hours: After Class and by Appointment

REQUIRED READINGS:

- Anderson, Stanley H. et al., 1993. Environmental Science (MacMillan Publishing Company., New York): 488 pp. (available from Student Bookstore (351-4210), Ned's Bookstore (332-4200) and College Bookstore (333-0505) NOTE: Current Edition is out of print. Second hand copies may be available at book stores. Call first. Additional copies (4) will be on reserve at the Main Library.

- Budget Printing Course Packet including selected supplementary reading materials such as from Miller, G.T.1990. Resource Conservation and Management; 974 Trowbridge Rd., E.L.; phone 351-5060.

- Handouts as distributed in class.

COURSE REFERENCE WEB SITE – SEE: (http://www.lib.msu.edu/link/rd320.htm)

COURSE OBJECTIVES:
This course provides a comprehensive review of our natural resources, including their unsustainable and planned uses. Population dynamics, land use alternatives and impacts are discussed. Natural resource systems (e.g., water, soils, minerals, air, agriculture, forests, rangeland) are explored. Selected resource use alternatives and environmental impacts are examined to identify sustainable resource management and planning practices. Key environmental policies, issues, concepts and alternative strategies in land use planning and resource management are identified in lectures and in case studies. Students will gain experience in case study approaches involving problem definition and problem solving using relevant problem, target and monitoring indicators. Group interaction is used to provide a simulated "real world" experience in conflict resolution and problem solving.

ATTENDANCE POLICY:
It is essential that students attend all sessions and effectively participate in group case study assignments. More than one unexcused absence will result in a grade adjustment. Unplanned absences require documented medical reasons.

EVALUATIONS:
Grades are based on short class assignments, three exams (including a final comprehensive examination) and two case study assignments. It is essential that students attend ALL classes. Only DOCUMENTED medical reasons or family emergencies constitute acceptable excuses for missed classes, assignments, due dates or exams. Exercises are due not later then one week after the assignment is discussed. Overdue assignments will not be graded.
Two, one-hour exams are administered during the semester and a two-hour final exam during finals week. The relative weights for each are:

First -Exam = 10%
Second -Exam = 10%
Assignments/Exercises = 50%
Final Exam = 20%
Student Participation = 10%
Total 100%

The total course score will be converted to a final grade on the 4.0 scale using the following standards:
4.0 90.0 +
3.5 80.0 - 89.9
3.0 70.0 - 79.9
2.5 60.0 - 69.9
2.0 50.0 - 59.9
1.5 40.0 - 49.9
1.0 30.0 - 39.9
0.0 below 30

GRADING FORM - RD 320 (see entries on the course website – ANGEL)

Student Name _____

Score (0-100) Weight Score x Weight

a. Exam 1 _____ .10 _____

d. Class Assignments _____ .20 _____

e. Final Exam _____ .20 _____

b. Exam 2 _____ .10 _____

c. Case Study
(a) _____ .10 _____
(b) _____ .20 _____

f. Student Participation _____ .10 _____

Total Score: _____

Final Course Grade: _____

PLANNED COURSE SEQUENCE:

Week 1: Introduction: Environmental Science, Management and Planning. Resource use, preservation, conservation, and management. Planning natural resources use: balancing supply and demand using institutional controls. Role and concepts of ecosystems.

Readings:
- Anderson Chapter 1 Environmental Science, Chapter 2 Ecosystems
- LAND USE PLANNING - AN INTRODUCTION (lecture 1.1- see course documents)
- Schultink, 1992 (Course Pack) p.p. 203-211

Writing Assignment # 1 - Linking the Resource Base, Land Use, Impact and Public Policy. (4 points) Note: All assignment are posted on the course website (ANGEL)

Week 2: Resource Demand, Supply, Environmental Quality and Public Policy: Population dynamics, natural resource supply and demand. The role of carrying capacity, sustainability indicators and the ecological approach. Limits of Growth: resource uses and conflicts, domestic and international policy perspectives.

Readings:
- Anderson Chapter 3. Populations, Chapter 16. Human Populations
- Lennarz, 1996 Environmental Policy: etc. p.p. 5 - 15.

Writing Assignment # 2 - Creation of Federal and State Environmental Policy (4 points)

Week 3: Soil and Water Management Topics: Including the role of policies and institutions in soil and water management.

Readings:
- Miller (Coursepack) Chapter 9. Soil Resources
- Legends and Tables County Soil Surveys (course pack)

Writing Assignment # 3 - Agro-ecology and Land Use Suitability (4 points)

Week 4-5: Case study: objectives, topics, review, selection and group identification. Review of potential topics and group formulation. Library research methods. Preparation of individual interest perspectives. Class room exercise: locating a controversial facility

Readings:
- Schultink, 1997 Environmental Indices and Public Policy: A Systems Perspective on Impact Assessment and Development Planning (course pack, page 103)
- Schultink, G. 2000. Critical Environmental Indicators: Performance Indices and Assessment Models for Sustainable Rural Development Planning in Ecological Modeling 130 (2000) pp 47 - 58 (see course documents in blackboard - wordfile upload)

Case Study Part I (INDIVIDUAL PAPERS)
a) Defining problems using problem or need indicators
b) Defining the desired solution using performance (target) and monitoring indicators

Individual Case Study - Part A: Individual presentations based on group topics. All students prepare individual interest perspectives relating to the case study group problem (issue) identified. Written statements include: problem definition, desired outcomes, and relevant qualitative and quantitative indicators (see class discussion and case study material on course site)

All students will present individual case perspectives representing various interested groups. These may include public agencies or private sector entities, NGO's, community organizations or advocacy groups. Presentations according to schedule during the weeks following the first exam. Time allotted: 15 minutes per group to be divided equally among all group participants.

Case Study Writing Assignment: Individual Case Study Perspective (10 points -includes paper and presentation)

Week 5: PowerPoint presentations of individual interest perspectives. See outline to be followed for presentation and paper. Maximum presentation time per person – 10 minutes. Groups should combine the various interest perspectives in one presentation with each student representing one unique interest perspective.

Week 6: Energy and Mineral resources: Energy as driving force in mobilizing resource outputs: energy resources, energy as measuring rod, relevant public policy issues. Critical supply and demand issues and linkages; energy prices, especially oil

Readings:
- Anderson: Chapter 4 Geophysical Systems, Chapter 13 Energy Resources
- Miller - Chapter 18 (course pack), Nonrenewable Mineral Resources and Solid Waste
- API table on Oil Reserves
- Tietenberg, 1988. p 115
- Larson et al. 1986. pp. 123 - 130

Week 6-2: FIRST EXAM

Week 7: Forest and Rangeland Resources Topics: Short-term and long-term goals for management, restoration, major policies governing resource use, and distinctive management techniques (Guest speaker and visit Plant Materials Center). Fish and Wildlife Resource Issues: Short-term and long-term goals for fish and wildlife management

Readings:
- Anderson: Chapter 9 - Forest and Grasslands,
- Anderson: Chapter 10 - Wildlife and Fisheries
- Anderson:, Chapter 11 - Biodiversity

Thursday this week - Visit to Rose Lake USDA – Plant Materials Center – see website for directions (linkage page)

Week 8: Water Topics: Surface and groundwater supply, demand, quality, role of water balance models, and land use impacts. Wetland functions and values. Video: "Water Trouble"

Readings:
- Anderson Chapter 5 - The Hydrological System, Chapter 6 - Water Quality and Pollution
- Smith et al, 1995, Chapter 3, pp. 10-35

Writing Assignment # 4 - Functions and Values of Wetlands (4 points)

Week 9: Economic Valuation of Natural Resources: Legislative Mandates, Concepts and Tools for Management and Decision Making.

Readings:
- Lipton et al., 1995. Chapter 1, 2 and 3
- Lennarz, 1996. Appendix I - p.p. 23 - 24

Writing Assignment # 5 - Concepts and Tools in Environmental Valuation (4 points)

Week 10: Land Evaluation and Land Use Planning: Principles and practices of resource assessment and land evaluation, use of geographic information system (GIS) and applied models in land suitability studies, impact and risk assessment; planning objectives, guidelines and strategies; role of policy analysis and formulation. Community growth management. Discuss video.

Readings:
- FAO, CHAPTERS 2,3, 4 AND GLOSSARY(see COURSE DOCUMENTS on course web site)
- Selected case studies in land evaluation and GIS-based suitability assessment (pages in course pack listed, including:
  - Burrough, 1985. pp. Chapter 1 and 570 – 91
  - Dangermond, 1983. pp. 59-69
  - Lyle and Stutz, 1983. pp. 93-103
  - Williams, 1985. pp.104-113
  - Schultink, 1992 (Course Pack) pp 211-220

Week 11-1: SECOND EXAM

Week 11-2: Conflict Resolution and Consensus Building - Defining policy, target and monitoring indicators. The Harvard Negotiation Project and the Nominal Group Process. **Class discussion and initial study group meeting to consolidate perspectives – groups to schedule follow-up meetings**

Group Case Study Assignment: Finalize group paper and presentation (Week 14-15)

Week 12-1: Air Resource: Atmospheric Circulation, pollution, greenhouse effect, ozone hole

Readings:
- Anderson, Chapter 7 Atmosphere and Global Climate Change
- Anderson, Chapter 8 Air Pollution

Today: Case study groups meet during class time to integrate the individual user perspectives into a common group perspective using the nominal group process (weighting and rating common preferences). This is an unsupervised, self-conducted meeting and ESSENTIAL to start the development of the final group paper and the group presentation. Group should appoint a team leader to take the group through the nominal group process and a secretary responsible for recording the steps, interim and final conclusions. A short symopsis of the group meeting – not exceeding 2 pages – needs to be forwarded to the instructor (Due 1 week from today)

Week 12-2: Sustainable Agriculture Topics: Use of land and natural resources for production of food and fiber; food scarcity, security; sustainable production practices; soil fertility and erosion control; strategies for sustainable development

Readings:
- Managing Planet Earth: Readings from Scientific American, 1990:
  - Chapter 1 - Managing Planet Earth
  - Chapter 7 - Strategies for Agriculture
  - Chapter 10 - Strategies for Sustainable Economic Development
- Schultink, 1992 (Course Pack) p.p. 220-224

Week 13-1: Public Risk and Waste Management Issues: Elements of risk, risk perception and valuation. Environmental quality and pesticides. Rates of waste generation; solid, hazardous, and toxic wastes; locating waste disposal sites.

Reading:
- Anderon - Chapter 14 - Pesticides and Chapter 15 - Wastes
- Lennarz, 1996. Appendix II - p.p. 24-25

Week 14-1: Management and Planning Topics: Examine goals and objectives of natural resources management, the common roles of managers in charge of various natural resources, legislative intent, and executive roles

Readings:
- Anderson, Chapter 17 - Where are we, and where do we go?
- Scientific American (1989): Chapter 11 - Toward a Sustainable World.
- Anderson, Chapter 17 - Where are we, and where do we go?
- Scientific American (1989): Chapter 11 - Toward a Sustainable World.

Week 14.2 and 15.1: **CASE STUDY GROUP PRESENTATIONS** (see sequence posted)

FINAL EXAM: THURSDAY, DECEMBER 8, 10:20 AM