

Evaluation of Management Strategies for Living Resources.**OBJECTIVES OF THE COURSE**

At the completion of the course the student will be able to:

- Develop a living resource management (LRM) system using concepts of control systems analysis
- Identify conceptual objectives for LRM and derive operational objectives
- Identify information requirements and estimation methods that can be used to assess the state of the resource relative to the objectives
- Develop control rules for meeting the operational objectives
- Evaluate the effectiveness of the control rules using performance measures in a systems simulation
- Develop reports of system performance suitable for a general audience.
- Use information on system performance and trade-off in objectives to select appropriate control rules

PREREQUISITES

Permission of Instructor, REM 611 and REM 612 or REM 613

APPROACH

The course will be a mix of lectures (25%), class discussion (25%) and computer laboratories (50%). The class will form a 'working group' tasked with evaluating and improving a management system for a living resource. Each student will take a turn at chairing a meeting of the working group. The management system evaluation will be based on closed loop computer simulations developed in the computer laboratory sessions. They will produce a written report for managers and stakeholders and make a presentation based on the report.

GRADES

Students in this course are graded on a mix of individual, group and class achievements. A good grade in this course depends on developing the ability to work in teams and to contribute to class discussions.

Students will be graded on two individual written assignments (2*15%), one written assignment carried out in a small group (50%). Participation in class discussions will contribute 20%.

All written assignments must include evidence of having consulted relevant literature, with correctly formatted citations, presentation of data summaries, methods and their assumptions, results, and some form of analysis or discussion of the effects of departures from the assumptions (see handout *Guidelines for Assignments*).

For assignments where students work in small groups, each group will have a leader and a reporter. The group leader will develop an agenda for the group and lead group discussions and assign subtasks to members. The reporter will take notes on group discussions and oversee the preparation of the group's report. All members are to participate in the writing task. The group will discuss and agree their report. Each group will give a brief presentation of their work to the class (meeting as the management steering group). The instructor will randomly select the member of the group to give the presentation. The class will discuss each report.

Each small group will report by consensus to the instructor on either the proportional contribution of each member to the completed assignment, or identifiable parts of the assignment that can be attributed to each member.

To be fair to all students University policy requires that deferred grades are given only under extreme and exceptional circumstances, such as illness or death in the family. A heavy workload is not a sufficient justification for a deferred grade. There are no exceptions to this policy.

Students should schedule their assignment work as evenly as possible throughout the semester. Start each assignment early; I am in a much better position to provide help if the demands on my time are spread evenly.

TEXTS

There is no set text.

INSTRUCTOR'S OFFICE HOURS

I will hold regular office hours (times to be decided during first class). I will be in my office during those hours to discuss any questions or concerns you may have. Occasionally, my office hours may clash with some other commitment, but to the extent possible I will advise the class of alternative times at the latest by the preceding class. Unless there is a major crisis I would like to keep the remaining time relatively uninterrupted to concentrate on preparing new course material, grading assignments, doing research and so on. I will very much appreciate your cooperation. Thank you.

COURSE OUTLINE

1. Living resource management as a control system

Types of control system:

- Open loop (set point) control
- Closed loop (feedback) control
- Passive adaptive management
- Active adaptive management (the dual control problem)

2. Analysis of living resource management systems

We will examine and classify some typical resource management systems in accordance with the types identified in section 1.

3. Design of living resource management systems

A management oriented paradigm

- Interpreting policy as operational objectives
- Iterative development and stakeholder consultation
- Assessment methods
- Decision rules
- Evaluation – closed loop simulations
- Performance measures
- Trade-off between multiple objectives
- Methods for the presentation of results

4. Laboratory project

We will select a management problem and develop and evaluate a control system simulation based on the management oriented paradigm