

Syllabus

Computer Aided Negotiation of Water Resources Disputes

Course description

Disputes over water are often bitterly fought. The gun-slingers of the old west have been replaced with armies of high-priced lawyers and well-funded lobbyists, but it is a take-no-prisoners struggle nonetheless. Students in this course will tackle a real-world, interdisciplinary water-resources problem using Computer Aided Negotiation (CAN), a process for guiding stakeholders to create a mutually beneficial solution to natural resource disputes. Each group will have the opportunity to consult with professional experts. Groups of students playing the stakeholders will identify what they want, need, and can have from the water supply based on relevant science and law, and then use a water supply operations computer model in planning sessions with the other stakeholder groups to agree upon the operating rules for the system.

This course does not require specific prior technical expertise but is designed for a diverse group of students with senior standing and a range of disciplinary backgrounds. The course was designed under a grant from the National Science Foundation with the goal of developing a model that can be used at other universities.

Instructor and Assistants

Academic objectives

1. Provide students with hands-on experience in negotiating natural resource disputes by drawing on a range of disciplinary perspectives and tools in balancing multiple objectives
2. Build students' capacity to cull relevant information from the following disciplines to understand and resolve water resources disputes: Hydrology, Physics, Ecology, Mediation/Conflict resolution, Public policy and law, Economics, Multi-objective analysis, Computer programming, Mathematics/numerical modeling, Statistics and Data Analysis
3. Increase student mastery of content and procedural knowledge in some of the above areas
4. Facilitate students' understanding of and appreciation for the role of science and technology in solving complex problems in public policy

Additional Course Objectives: Impacting Water Management and Building an Educational Tool

This is not a typical course. We will be using cutting-edge techniques (not those typically used in water management and disputes) to develop new and, ideally, better management practices than those currently used in our case study, the Delaware River Basin (DRB). The Delaware River Basin Commission is aware of the course and is very interested in our work. There is the real possibility that we will influence water management in the basin. Therefore, it is essential that your research be high quality and well documented.

In addition, we are collecting information that will be used by other universities to offer the course. This collection of materials, called "OASIS Scholar," will be made widely available to provide the course's educational benefits without requiring the substantial effort of choreographing a course of this nature. For example, you will have access to a number of practicing experts; students at other universities may not. To allow these students to benefit from our experts, we will be asking you to archive your email exchanges on Blackboard. Similarly, we want to avoid having future students contact stakeholders in the DRB with the same questions they have already answered

for you. You will be receiving detailed information on how to archive your research. All identifying information will be removed (ie., your name and email address).

Course requirements

Your final grade will be determined as follows:

	% of final grade
Written Reports	
Performance Measure report draft	10
Performance Measure report final	10
Memo to governor (group)	10
CAN report individual	10
CAN report group	10
CAN session (group)	5
Assignments	
Worksheets for audio clips	15
Excel, OASIS, other	15
Submitted model run for negotiations (group)	10
Participation	5

You will receive specific grading criteria for your written reports and the Computer Aided Negotiation session in class. You will be working in groups of 2 or 3, representing one of the states in the basin. Within that state, you will be assigned a specific stakeholder interest to focus on (for example, flood control in Pennsylvania or salinity contamination of aquifers in New Jersey). You will submit written reports and participate in the CAN session *as a group*, but you will also receive an individual grade on written reports for the sections pertaining to your stakeholder interests.

Overall, 35% of your final grade will be a group grade. One of the things we hope you will learn in this course is how to work effectively on a team. The instructor will be meeting periodically with the teams and is available anytime to help with problems. We encourage you to bring any major imbalances in effort to the instructor's attention as early in the semester as possible.

Worksheets accompanying powerpoint and audio files are graded on a "you did it or you didn't do it" basis: 8 points for a weak effort, 10 points for a standard effort (mostly, everyone will get 10s for doing it), 12 points for a particularly strong effort. If you get stuck and are unable to complete the worksheet, please explain what you are stuck on, and what additional information you would need to move forward to receive full credit.

On the Excel and OASIS assignments, you will be graded on a typical scale (90-100 is an A, etc.) based on completeness, correctness, clarity, and any other criterion specified with the assignment.

A few days before the Computer Aided Negotiation Session, your group will submit a proposal for a new water management plan in the form of a model run and short (few sentences) explanation (you will have plenty of support to aid you in doing this both in class and office hours, so don't worry). I will be working closely with you over 5 weeks to develop this alternative. Your group will receive a grade at this time based on the creativity and performance of the proposal, as well as the level of effort your group has invested. I will consult with the course assistants on this grade as well.

Your participation grade will be based on the following: 1) thoughtful contribution to discussion on powerpoint/audio clips (1% of overall grade), 2) CAN session (your personal contribution to the CAN session, 1%¹), 3) participation in group work (in-class partner or small group assignments, 1%), 4) general in class participation (asking questions, volunteering information, etc., 1%¹), 5) contribution to OASIS scholar (posting useful links and documents, posting email exchanges, alerting us to information that is not useful, 1%). You may also receive extra credit for answering questions posed by class (when questions come up in class that no one can answer, I'll take volunteers to find out and report back at next class meeting)

Academic integrity

Required textbooks

There are no required books, but I would recommend *Getting to Yes: Negotiating Agreement Without Giving In* by Roger Fisher and William Ury. (1981, 1991).

Course outline

Topics covered each day are provided in a separate Schedule document and may change over the semester. Changes that affect deadlines will be announced in class.

A few additional notes

This is an extremely interdisciplinary class. There is a broad range of backgrounds among the students, instructors, experts, and other guests. We need to draw on each others knowledge (so please don't be shy about speaking up), and we need to ask when we don't understand something (so please don't be shy about asking questions).

We'll be using quite a bit of technology: Blackboard, a server to run the OASIS model, Skype and Netviewer to communicate. You will be receiving a handout on interacting with these technologies. Things will most certainly go wrong, so please plan to alert us to problems as soon as you find them, and try to be patient.

¹ This is intentionally small to keep people from trying to "over participate." You will be graded for appropriate participation rather than quantity.