Course overview
Water resources provide to people and societies a myriad of economic and environmental benefits, related to productivity, consumption, health, and general well-being. Some experts however argue that conflicts over water are likely to become more frequent and violent as human population growth and development patterns increase pressure on available supplies of freshwater.

This course will focus on the theories and historical/empirical evidence on the linkages between water resources and conflict or cooperation. Our primary interest will be directed to transboundary water issues, broadly defined. Conceptual issues related to water scarcity, and theories of natural resource conflict, hydro politics, hydro hegemony and water security will be discussed. The role of multiple and diverse stakeholders, and the spatial scale of disputes or agreements over water will also be considered. International water resource problems will also be linked to a broader literature on the management of public goods and economic externalities as they relate to the environment and health.

Students will read about contemporary research on the patterns of water and resource conflict and cooperation, learn about the norms and laws for mediating water conflict at different jurisdictional levels, and relate these to current events related to water. Students will be expected to critically assess a) the assumptions of different elements of this research, and b) attempts thus far to classify or systematize knowledge of water resources conflicts and cooperation. Individual research projects will complement the broader course outlook.

Course objectives
Student learning will be achieved in the following specific areas in this course:

- Understanding of the basis for predictions that have been made about the future of water management from a variety of disciplinary perspectives.
• Knowledge of the hypotheses and evidence on drivers that have contributed to the emergence of writings on water conflict and cooperation over the recent historical period.
• Identification of the features of water conflicts and types of agreements and cooperative frameworks devised for managing them.
• Evaluation of various explanations for conflict and cooperation pertaining to water resources. This will include the following specific issues: a) Consideration of the importance and meaning of different conceptions of the value of water, including notions related to scarcity; b) Evaluation of different definitions of water rights for dealing with conflicts; c) Assessment of the role of institutions designed to deal with such problems; and d) Weighting of the importance of uncertainty and its role in encouraging risk aversive management strategies in light of the possibility of climate change and population-level impacts on health and well-being.
• Exploration and work on an in depth research project (quantitative or qualitative in nature) investigating a specific water resource issue that holds particular interest for the student.

Basic Topic List

Unit 1: Introduction; Water and resource conflict theories (Weeks 1-2)
  1. Organization of the course, introduction to basic principles and the problem of transboundary waters
  2. The conflict-environment position (and critiques)
  3. The natural resource curse theory applied to water
  4. Water as a catalyst for cooperation

Unit 2: Systematic ways of thinking about water conflict and cooperation (Week 3)
  1. Type of evidence used for systematic analyses: Transboundary Freshwater Dispute Database (TFDD) and other river basin event data
  2. Quantitative assessments of conflict and cooperation; and challenges

Unit 3: Water and scarcity: definitions and dimensions of depletion (Week 4)
  1. Concepts of water scarcity (and relevance to well-being and conflict processes)
  2. Models of resource use and depletion
  3. Scarcity in the future: Climate, technology and adaptation

Unit 4: Water infrastructure, development and well-being (Week 5)
  1. Investments in water resources: drivers or correlates of economic development?
  2. What do we know about the impacts of infrastructure?
  3. Linking water resources to health and well-being

Mid-semester presentations / discussion (Week 6)
**** Fall break ****

Unit 5: Integrated water resource management (IWRM) and socio-hydrology (Week 7)
   1. IWRM
   2. Game theory
   3. Socio-hydrology

Unit 6: Economic perspectives (Week 8)
   1. The challenging economics of water
   2. "Virtual" water, trade, and general equilibrium
   3. Markets and privatization

Unit 7: International legal frameworks for dealing with water and institutional perspectives (Week 9)
   1. International water law: Helsinki rules and UN Convention
   2. Noteworthy river basin agreements and institutions
   3. Management of commons property resources and institutional resilience

Unit 8: Water security and competition (Week 10)
   1. Hydropolitics and securitization: Power asymmetries, issue salience, negotiation
   2. The effects of water variability and disasters
   3. Internal politics and discourse

Nile Case study (Week 11?; TBD)

Weeks 12 and 13: Student presentations and discussions

Textbook

As the literature on water conflict and cooperation is fairly new and books written on the subject tend to be written based on very specific viewpoints and/or opinions on this issue, it would be difficult to argue that there is one fully appropriate textbook for the course. Instead, readings will be collected and made available on the course blackboard site.

Useful online resources


- International Water Association:
- Some key river basin organizations


- Sources for water development tenders (project-specific calls to design firms):

2. Global Water Intelligence (monthly).
3. Water International Publishing Ltd. ([www.e-waternews.com](http://www.e-waternews.com)) - daily updates of water project tenders and contracts in developing countries.


- Water, Engineering and Development Center: [http://wedc.lboro.ac.uk/](http://wedc.lboro.ac.uk/)


### Organization of class meetings

The reading materials are mainly journal articles from the water literature, supplemented with sections from reports and books. The class meetings will typically consist of a short instructor introduction followed by more in-depth student-led discussion of assigned readings and specific examples. I expect students to come prepared for these discussions and to actively participate in them. In general, two students will be randomly assigned to lead the discussions pertaining to the weekly sessions identified on the syllabus.

The course will also include occasional reflections, which I will ask you to submit regularly. For example, I may ask for short reaction papers to specific readings, or I may provide groups with some data from the readings and ask them to use those data to conduct basic calculations and analyses that relate to the concepts in the readings. There will also be 1 literature review assignment and 2 intermediate writing assignments (plus a problem statement) related to students’ selected research projects.
Expectations
Students are expected to:

- Be fully prepared to discuss readings assigned for each class period
- Attend all class sessions
- Submit assignments on time (no late assignments will be accepted)
- Engage in civil and informed in- and out-of-class discussions.

As you see from the syllabus, there are plenty of readings. Readings denoted as background are optional and will not be discussed in detail, though they do provide important background on the topics in question. I leave it to your discretion to decide whether you'd like to read, skim, or skip these.

Finally, the honor code governs all work in this course. If you have questions about what is allowed and what is not allowed, please let me know. I have tried to be clear about when (and how) collaboration is allowed, whenever possible. Please respect the Duke Community Standard (http://studentaffairs.duke.edu/conduct/about-us#node-950):

“Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Citizens of this community commit to reflect upon and uphold these principles in all academic and nonacademic endeavors, and to protect and promote a culture of integrity. To uphold the Duke Community Standard: a) I will not lie, cheat, or steal in my academic endeavors; b) I will conduct myself honorably in all my endeavors; and c) I will act if the Standard is compromised.”

Grading and evaluation
Student grades will be computed as follows:

- Weekly reflections & participation (15%)
- Literature review assignment (15%)
- Intermediate assignments related to research project (10%)
- Student-led discussion (10%)
- 10-15 minute research project presentation (10%)
- Final research paper (40%)

Each of these components is described in more detail below. If you have specific questions about how your grade is calculated, or about a grade received on one of your assignments, please come to office hours or schedule an appointment outside of class (i.e., do not spend valuable class time on these questions). If you have general questions that others are likely to have as well, you may voice them at the beginning of class.

Weekly (or approximately weekly) reflections. These will be short. Some will be completed before the start of a class period to assess student preparation and comprehension of
assigned readings; others will be given at the end to judge students’ engagement in class discussions; some will be turned in by the Friday night (midnight) following class. The assignments will not be announced ahead of time and cannot be made up, and some may involve work in small groups. The assignments will be returned to students promptly. Four marks will be possible for these assignments: Excellent, Good, Satisfactory, or Not Acceptable (NA; missed assignments will automatically receive the 'not acceptable' mark). Excellent grades on these assignments actually require something rather exceptional and will rarely be granted. Good marks display a firm grasp of the material in question, and some valuable insights. Satisfactory marks will not hurt your course grade; while excellent and good marks will help it, respectively. For example, if you get all S marks, you will receive the full 10%, while all E’s and G’s would get you 20% and 15%, respectively, giving you the possibility of boosting your grade if you falter in other areas. General participation will represent 5% of your grade.

**Literature review assignment.** Details will be announced early in the semester. This assignment will represent 15% of your grade.

**Intermediate graded project assignments (2; 10%).** Details on these assignments will be provided throughout the course. These written assignments will help you to start your projects early and make steady progress so that you do not leave things until the last minute.

**Student-led discussion (10%).** Pairs of students will be responsible for leading the discussion (randomly assigned) for the readings pertaining to one class period (generally taking about 75-90 minutes of class time including discussion), and for posting a 2-3 page "reaction paper" by Friday at 5 pm following the class meeting. This reaction should address the following: 1) Relate the article to other literature or ideas seen in the course; 2) List some of the main insights that emerged from the discussion of the articles in class; and 3) Address any issues that may not have been fully discussed.

**Research paper (40%) and presentation (10%).** Students have the option to carry out research in one of the following two broad areas:

1. A group systematic review on a topic chosen by the instructor: Topic will be announced early in the semester; students choosing this option will then need to define the parameters and methods guiding the review. Groups will have no more than 3 students, but multiple groups are possible.
2. Individual quantitative analysis and/or hypothesis testing related to water resources issues that are relevant to water conflict and cooperation literature or theories (for example considering the effect of droughts or floods on conflict). For students working on such research project, evaluation will not only be based on the quality of analysis conducted but also on the effort put into data assimilation and methodology.

Two written assignments, plus an ungraded initial problem statement, will provide students with the opportunity to receive formal feedback from the instructor over the course of the semester. It is expected that the precise inquiry for this project will evolve as the semester progresses.
progresses; the intermediate assignments therefore should not be viewed as a binding “contract”. All students are encouraged to discuss their projects with the instructor before each of the intermediate assignments are due.

The research project work will culminate in a 15-20 (maximum) page paper and short presentation (~15-20 minutes for individual projects including questions; and longer for group projects) to the class.

There will be no final exam.
Unit 1: Introduction; water and resource conflict theories (Weeks 1-2)

Topics:

- Organization of the course, introduction to basic principles and the problem of transboundary waters
- The conflict-environment position (and critiques)
- The natural resource curse theory applied to water
- Water as a catalyst for cooperation

Readings: Mon, Aug.29


Readings: Mon, Sep.5


Unit 2: Systematic Ways of Thinking about Conflict & Cooperation (Week 3)
Topics: **Mon, Sep.12**

- Type of evidence used for systematic analyses: Transboundary Freshwater Dispute Database (TFDD) and other river basin event data
- Quantitative assessments of conflict and cooperation; and challenges

Readings:


Assignment 1 (Ungraded): Research topic statement due Tues Sep.13 at 5 pm.

**Unit 3: Water and scarcity: definitions and dimensions of scarcity and depletion (Week 4)**

Topics: **Mon, Sep.19**

- Concepts of water scarcity (and relevance to well-being and conflict processes)
- Models of resource depletion, water use
- Scarcity in the future: Climate, technology and adaptation

Readings:


Unit 4: Water infrastructure, development, and well-being (Week 5)

Topics: Mon, Sep.26

- Investments in water resources: drivers or correlates of economic development?
- What do we know about the impacts of infrastructure?
- Linking water resources to health and well-being

Readings:


8. **Film:** Cadillac Desert Part I (Note: We will view this in class)

Oral Research Presentations (Week 6): Mon, Oct.3

Assignment 2 (Graded): Research project draft literature review (Due Fri. Oct.7 at 5 pm)

**** Fall Break ****
Unit 5: Integrated Water Resource Management (IWRM) and socio-hydrology (Week 7)

Topics: Mon, Oct.17

- IWRM
- Game theory
- Socio-hydrology

Readings:

Systematic Review Assignment (Graded): Due Mon. Oct.17 at 4 pm

Unit 6: Economic perspectives (Week 8)

Topics: Mon, Oct.24

- The challenging economics of water
- "Virtual" water, trade, and general equilibrium
- Markets and privatization

Readings:


**Unit 7: International legal frameworks and institutional perspectives (Week 9)**

Topics: Mon, Oct.31

- International water law: Helsinki rules and UN Convention
- Noteworthy river basin agreements and institutions
- Management of commons property resources and institutional resilience

Readings:


Assignment 3 (Graded): Draft data and methodology sections (Due Mon, Oct. 31 at 4 pm)

**Unit 8: Water security and competition (Week 10)**

Topics: Mon, Nov. 7

- Hydropolitics and securitization: Power asymmetries, issue salience, negotiation
- Volatility, disasters and instability
- Internal politics and discourse

Readings:


**Nile Case Study: Mon, Nov. 14 (Week 11)**

**Class presentations (Weeks 12-13): Schedule TBD**

Final paper: Research project paper (Due Fri, Dec. 9 at 5 pm)