Course summary

New insights on the coupled resource linkages between water and energy have moved water-energy nexus analysis beyond straightforward quantification of energy-for-water and water-for-energy. In the context of global change (including climate change, rapid urbanization, and global markets for energy, biofuels, and food), research and decision-making on these coupled resources increasingly focuses on:

- spatial patterns of water and energy use (source to consumption),
- mutual influences between energy and water policy and planning
- internalizing ‘externalities’ (unintended consequences—indeed reinterpretation—of ‘waste, including deferred impacts), and
- policy formulation (with emphasis on global change adaptation involving water and energy that does not undermine long-term mitigation)

The seminar will address the following list of topics:

- the energy futures to meet urban and agricultural water demand,
- water resources needs for power generation using conventional fuels and renewables,
- the implications and role of water in the emerging carbon economy,
- comparative energy- and water-based perspectives on efficiency and conservation, and
- the co-evolution of research and policy-making on water and energy that lead to enhanced societal outcomes.

Course materials
Reading materials will be distributed using D2L.

Grading policy
Grades are based on regular participation in seminar discussions, and satisfactory completion of a term paper developed as a publishable manuscript that is conceptualized, researched, orally presented in class (with feedback from the instructor and fellow students), and finalized as part of the course. Papers that the instructors deem to be publishable will be considered for a special issue of the journal (TBD).

Requirements
No course pre-requisites.
# Schedule of Topics

(subject to revision as agreed/announced)

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<td>The conventional energy-water nexus</td>
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<td>I. Water for energy: a) Fossil-fuel based with climate implications</td>
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<td>b) Hydropower – Chile and relevant cases</td>
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<td>c) Renewables and the energy-water nexus</td>
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<td>d) Energy resource extraction – environmental and social costs</td>
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<td>II. Energy for water: a) Urban water supply, augmentation, wastewater</td>
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<td>b) The groundwater irrigation – electrical power nexus</td>
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<td>c) Desalination</td>
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<td>d) ‘Waste’ remediation, resource recovery</td>
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<td>Efficiency and conservation – energy and water analogs, differences, and synergies</td>
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<td>Energy and water for global change adaptation and mitigation</td>
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**Final note**

All information contained in this syllabus (other than the grading policy portion) may be subject to change with reasonable advance notice.
Bibliography


