

# UC Water Academy 2025

## Course Syllabus

### Virtual Weekly Classes:

Tuesdays and Thursdays, 5 pm – 6 pm

January 21 to March 13, 2025

Remote only ([Zoom link](#))

Shared [Google](#) Drive with course materials

### Optional River Trips in Summer 2025:

1 day rafting trip on the South Fork American River, April 19, 2025.

1 week Tuolumne Field Trip, Aug 9–16, 2025. Application [link](#).

### Instructors:

Dr. Ted Grantham ([tgrantham@berkeley.edu](mailto:tgrantham@berkeley.edu))

Dr. Sarah Yarnell ([smyarnell@ucdavis.edu](mailto:smyarnell@ucdavis.edu))

Dr. Wietske Medema ([wmedema@berkeley.edu](mailto:wmedema@berkeley.edu))

Dr. Sooyeon Yi ([sooyeon@berkeley.edu](mailto:sooyeon@berkeley.edu))

### Course Description:

California has a rich and complex historical relationship with water that is intimately tied to the state's seasonal Mediterranean climate and pronounced geographic variability – encompassing temperate forests on the north coast, alpine ecosystems of the Sierra Nevada, densely populated urban centers along the coast, and deserts in the south. The development of water resources has played a central role in transforming the state into a leader in global agricultural production and one of the largest economies in the world. The construction of large-scale water storage and distribution systems has also transformed the state's natural environments – particularly rivers, floodplains, and seasonal wetlands – and contributed to the deterioration of water quality, the decline of fisheries, and the extinction of freshwater species. Climate change is creating new challenges for protecting ecosystems and delivering reliable water supplies to people, particularly the most vulnerable.

This course will provide the historical, scientific, legal, and institutional background needed to understand the challenges of providing water for California's growing population, agricultural economy, freshwater ecosystems, and other competing uses. Students from across the UC campuses will meet virtually twice a week to hear presentations from water experts, discuss relevant readings, and establish foundational knowledge around the history of water management and policy in California, the state's natural hydrologic and ecological systems, patterns of water use, and critical water management challenges. Students will also have the opportunity to participate in an optional river rafting trip in the summer of 2025.

### Course Objectives:

1. To introduce students to local and statewide water management issues and their impact on human health, welfare, ecosystems, and natural resources;
2. To develop a basic understanding of California's water system, infrastructure, and institutions;
3. Instill a basic understanding of hydro-ecological processes operating in landscapes and the role of water in linking the myriad components of the environment; and
4. To define the roles of science, management, and policy in addressing water problems.

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### Course Format:

Weekly virtual classes will be held on Tuesday and Thursday evenings from 5 pm to 6 pm between January 21 and March 13, 2025. Each class will include a 45-minute presentation by a UC professor or guest instructor, followed by 10–15 minutes of Q&A.

### Weekly Assignments:

Before each class meeting, you must submit at least two questions and/or comments in response to assigned reading materials. Responses shall be submitted through online forms by midnight the day before the class meeting.

### Independent Project Assignment:

Students enrolled in the course will be asked to create a story map, blog-style essay, or infographic highlighting a water issue, challenge, or solution. The independent projects are an opportunity for you to deeply explore a particular topic relating to California water. We don't expect a comprehensive evaluation but encourage you to review a handful of sources to gain a richer understanding of an issue that you can then share with the class (and potentially the broader public). Your project is due at the start of the last week of the course. There will be an opportunity to present assignments during the last week.

### Credit:

Students can receive 1–2 independent study units for this course from an instructor at their home institution. Grades (Satisfactory/Unsatisfactory) will be based on the completion of weekly assignments and presentation of their independent project at the end of the course. We recommend that students in the semester system enroll for 1 unit and students in quarter systems enroll in 1–2 units. To enroll for credits, please contact the individual at your home institution, listed below. They will provide you with a course number for registration. **Please let your campus lead (and the course instructors) know if you are enrolling for units.**

UC Berkeley, Ted Grantham ([tgrantham@berkeley.edu](mailto:tgrantham@berkeley.edu))

UC Davis, Sarah Yarnell ([smyarnell@ucdavis.edu](mailto:smyarnell@ucdavis.edu))

UC Davis Law, Karrigan Bork ([ksbork@ucdavis.edu](mailto:ksbork@ucdavis.edu))

UC Irvine, Nicola Ulibarri ([ulibarri@uci.edu](mailto:ulibarri@uci.edu))

UCLA, Veronica Herrera ([vherrera@luskin.ucla.edu](mailto:vherrera@luskin.ucla.edu))

UC Riverside, Kurt Schwabe ([kurt.schwabe@ucr.edu](mailto:kurt.schwabe@ucr.edu))

UC Santa Barbara, Raphael Schmitt ([rschmitt@ucsb.edu](mailto:rschmitt@ucsb.edu))

UC Merced, Erin Hestir ([ehestir@ucmerced.edu](mailto:ehestir@ucmerced.edu))

*\* Please contact Ted Grantham if your institution is not listed above*

### Office hours:

By appointment only

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### Course schedule:

| Date                                   | Topic                                | Speaker                                    | Readings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|--------------------------------------|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wk 1 (Jan 21)</b><br>Tue, 5– 6 pm   | Intro to California's water, part I  | Dr. Sarah Yarnell, UC Davis                | <a href="#">Hanak et al. 2010</a> (Chapter 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Wk 1 (Jan 23)</b><br>Thurs, 5– 6 pm | Intro to California's water, part II | Dr. Ted Grantham, UC Berkeley              | <a href="#">PPIC Priorities for California's Water 2024</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Wk 2 (Jan 28)</b><br>Tue, 5– 6 pm   | Central Valley water system          | Andrew Schwarz,<br>Dept of Water Resources | Review the subsections on the CVP and SWP in Chapter 1 of Hanak et al. 2010 (pg 43–50)<br>Review the subsections on the 'Bay-Delta Controversy' and 'CALFED' in Chapter 1 of Hanak (pg. 59–65)<br>Read the first part of Chapter 2 of Hanak (pp 71–91)                                                                                                                                                                                                                                                           |
| <b>Wk 2 (Jan 30)</b><br>Thurs, 5– 6 pm | Climate change                       | Dr. John Abatzoglou,<br>UC Merced          | <a href="#">Huang and Swain 2022</a><br><br><a href="#">Question Form</a>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Wk 3 (Feb 4)</b><br>Tue, 5– 6 pm    | Groundwater management               | Dr. Thomas Harter,<br>UC Davis             | Chapters 2.2.5 (Sustainable Yield), 3.3.5 (Interconnected Surface Water monitoring), and 3.4.5 (Interconnected Surface Water Management Criteria) in the <a href="#">Scott Valley Groundwater Sustainability Plan</a><br>Chapters 2.2.5. (Sustainable Yield), 3.4.1 (GW Level criteria) and 3.4.5 (ISW Criteria) in the revised <a href="#">Butte Valley Groundwater Sustainability Plan</a><br>See Chapter 2 of each GSP for general background information on each basin.<br><br><a href="#">Question Form</a> |
| <b>Wk 3 (Feb 6)</b><br>Thurs, 5– 6 pm  | California Agriculture               | Dr. Alvar Escriva-Bou,<br>UC Davis         | <a href="#">The future of agriculture in the San Joaquin Valley (report + technical appendix)</a>                                                                                                                                                                                                                                                                                                                                                                                                                |

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|----------------------------------------------|------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              |                                          |                                                                | <a href="#">Question Form</a>                                                                                                                                                                  |
| <b>Wk 4 (Feb 11)</b><br>Tue, 5– 6 pm         | Water justice                            | Dr. Kristin Dobbin<br>and Jenny Rempel, UC<br>Berkeley         | <a href="#">Balasz and Ray 2014</a><br><a href="#">London et al. 2021</a><br>Optional: <a href="#">Rempel and Dobbin 2024</a><br><a href="#">Question Form</a>                                 |
| <b>Wk 4 (Feb 13)</b><br>Thurs, 5– 6 pm       | Urban water<br>management                | Dr. Erik Porse,<br>California Institute<br>for Water Resources | <a href="#">Gonzales 2017</a><br><a href="#">Pincetl 2019</a><br><a href="#">Question Form</a>                                                                                                 |
| <b>Wk 5 (Feb 18)</b><br>Tue, 5– 6 pm         | Environmental<br>flows                   | Dr. Bronwen<br>Stanford, The Nature<br>Conservancy             | <a href="#">Grantham et al. 2020</a><br><a href="#">Question Form</a>                                                                                                                          |
| <b>Wk 5 (Feb 20)</b><br>Thurs, 5– 6 pm       | Salmon<br>conservation and<br>management | Dr. Stephanie<br>Carlson, UC Berkeley                          | <a href="#">Schindler et al. 2010</a><br><a href="#">Question Form</a>                                                                                                                         |
| <b>Feb 21: Draft Independent Project Due</b> |                                          |                                                                |                                                                                                                                                                                                |
| <b>Wk 6 (Feb 25)</b><br>Tue, 5– 6 pm         | The Delta                                | Dr. Brett Milligan, UC<br>Davis                                | <a href="#">Luoma 2015</a><br><a href="#">Question Form</a>                                                                                                                                    |
| <b>Wk 6 (Feb 27)</b><br>Thurs, 5– 6 pm       | California water<br>law                  | Dr. Karrigan Bork, UC<br>Davis                                 | <a href="#">Section I. A. 3. on Water Rights and<br/>Infrastructure</a><br><a href="#">Section II, on Consequences of Climate<br/>Change for Water Rights</a><br><a href="#">Question Form</a> |
| <b>Wk 7 (Mar 4)</b><br>Tue, 5– 6 pm          | Colorado River                           | Dr. Kurt Schwabe, UC<br>Riverside                              | <a href="#">SSTF Executive Summary</a><br><a href="#">CO River – Water Education<br/>Foundation</a><br><a href="#">Question Form</a>                                                           |
| <b>Wk 7 (Mar 6)</b><br>Thurs, 5– 6 pm        | Water–energy<br>nexus                    | Dr. Josh Viers, UC<br>Merced                                   | <a href="#">Facincani–Dourado Et Al 2024</a><br><a href="#">Viers–Nover 2017</a><br>Optional:<br><a href="#">Facincani–Dourado Viers 2024</a><br><a href="#">Question Form</a>                 |
| <b>Wk 8 (Mar 11)</b><br>Tue, 5– 6 pm         | Project<br>Presentations                 | TBD                                                            | TBD                                                                                                                                                                                            |

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|------------------------------------------|--------------------------|-----|-----|
| Wk 8 (Mar 13)<br>Thurs, 5– 6 pm          | Project<br>Presentations | TBD | TBD |
| March 21: Final Independent Projects Due |                          |     |     |

This course is part of the [COEQWAL](#) Project, supported by the UC Office of the President's [Climate Action Initiative](#).

