



## **ENV/FSST/GSCI 320: Water Resources: Environment, Society, and Power**

### **Course Syllabus**

**Instructor:** Brooke Porter, Ph.D. M.Ed., B.Sc.

**Credits:** 3

**Contact Hours:** 45

**Prerequisites:** None

**Class Hours:** TBA

**Office Hours:** TBA

**Course Type:** Course with Field Lab and Service Learning

**Lab Fee:** 210 €

### **Course Description**

Water plays a central part in our lives. Almost all human activities are dependent on water and the functioning of ecosystems; the well-being of the environment, industries, and the economy; agriculture and food production, and beyond. This course aims to understand ways in which water influences our lives and to explore the interdependencies and linkages between water and human activities. Through a combination of both the social and natural sciences, the course will take a critical look at water-resource sustainability. Using a transdisciplinary approach water and water resources will be explored through social and environmental constructs as well as socioecological lenses.

### **Learning Outcomes and Assessment Measures**

By the end of the course, students will be able to:

#### **Learning Outcomes**

Understand interdependencies between water, society and the environment

#### **Assessment Measures**

*Course requirements that will be used to assess students' achievement for each learning outcome*

Participation in class discussions  
Field Lab Assessment - Research Methods & Findings

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	Field Lab Assessment - Research Summary & Conclusion
	Midterm/Final Exams
Identify linkages between energy, food, land use, and water	Assessment #2- Social Activism In-class discussions Midterm/Final Exams
Examine cultural and political relationships with water systems	Assessment #1- Identification of Hometown Drinking Water Midterm/Final Exams
Examine biological factors in freshwater ecosystems	Field trip laboratory In-class formal debate Midterm/Final Exams
Explore how water systems have shaped Italy and Italian culture	Service learning laboratory In-class discussions Midterm/Final Exams
Develop innovative strategies for promoting sustainable water use	Assessment #3- Intercultural Sustainability & Innovation Midterm/Final Exams

## Course Materials

### Readings

A course reader, including all the indicated readings, will be available at a local copy shop for a maximum of 30 €. Please see “Umbra Institute Course Materials - Textbooks and Readers” handout provided in the orientation folder for more information.

### Films

End of the Line (time allowing)

### Other

Students are required to maintain a field journal during the semester.

## Assessment

Participation	10%
Field Journal	15%
Assessments (3+)	20%
Field Lab	10%
Service Learning Project	10%
Mid-term Exam	15%
Final Exam	20%

## Grading

Letter grades for student work are based on the following percentage scale:

Letter Grade Range	Numerical Score Equivalent	Student Performance
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A	93% - 100%	Exceptional
A-	90% - 92%	Excellent
B+	87% - 89%	
B	83% - 86%	Superior
B-	80% - 82%	
C+	77% - 79%	
C	73% - 76%	Satisfactory
C-	70% - 72%	
D+	67% - 69%	
D	63% - 66%	Low Pass
D-	60% - 62%	
F	59% or less	Fail (no credit)

## Course Requirements

Grades are based on a combination of participation, in-class assessments, service learning, and exams.

### *Participation (10%)*

Class participation grades are based on oral contributions to the collective learning experience of the class. Participation means active engagement in the course: being consistently prepared for class having carefully read the assigned readings, asking questions, responding to questions, listening attentively to others, and offering your own insights and opinions.

### *Assessments (20%)*

Some lectures will include small in-class assignments or pop quizzes. In addition, there will be 7 take-home assessments. These assessments serve to reiterate the objectives of the course and are important for the overall development of the students. Students will be provided with a grade on each assessment.

### *Field Lab (10%)*

Students will collaborate with ARPA undertaking a water quality lab during an overnight stay at Isola Polvese, on Lake Trasimeno. Please see Service Learning Syllabus Appendix at the end of the syllabus for more information. Students will design a mini-research project and complete two relevant assessments.

### *Service Learning Project (10%)*

Students will support the Umbra Institute in its efforts to become more sustainable through observations, data collection and analyses. As part of this project, students will develop, organize, and lead various events and/or workshops to raise awareness about the world's finite resources. At the end of the semester, students will summarize their findings and provide feedback via a strategic plan to Umbra administration.

During Special Academic Events Week, the class will create an activity based on the service learning project to be shared with the Umbra community at the Community EngageGAMES Presentation. Participation in this event is MANDATORY and an integral part of the community engagement grade. Please see the Service Learning Syllabus Appendix at the end of the syllabus for more information.

### *Reflective Field Journal (15%)*

Students will be required to keep a reflective field journal during the semester. Important items to document include daily interactions with water, reflections on lecture material, and observations during the field trip and service learning components as they relate to materials discussed in class. To receive full points, students must make at least two in-depth entries per week. A rubric will be provided during the first class.

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#### *Mid-Term Exam (15%)*

The mid-term exam will cover all topics presented in the first half of the course. It may consist of multiple choice and short answer questions. The exam will take approximately 60-90 minutes to complete and is closed book/closed notes. No alternative exam dates will be offered.

#### *Final Exam Assignment and Activity (20%)*

The final exam will cover all topics presented in the course. The assignment, designed to create nonlinear, visual ways to understand, produce and represent learned knowledge, will be introduced at the beginning of Week 12. This assignment will account for half of the final grade (10% of the total grade). The other half of the final exam will consist of a problem solving activity. This component of the exam will take approximately 90 minutes to complete and is closed book/closed note. This is the only time the exam activity will be given. No alternative exam activity dates will be offered.

#### Course Content Disclaimer

There is some sexual content based on graffiti discussed during a lecture regarding gender and Roman baths.

#### Additional Course Information

This course combines a field trip to Lago Trasimeno to observe *pescia turismo* (fishing tourism) with the AARPA community engagement. Students will be expected to prepare for the field trip as well as complete multiple assessments relating to the field trip.

#### Attendance Policy

Class attendance is **mandatory**. Students are allowed **two “free” absences**, which do not need to be justified. However, it is considered common courtesy to inform the instructor of your absence when possible. **It is the students’ responsibility to keep absences in case of real necessity (sickness or any other unforeseen inconvenience that may prevent students from being in class). Please contact the professor via email as soon as possible regarding ANY absences.** Each additional absence, unless for a very serious reason, will lower the students’ grade by one grade level (i.e., a final grade of a B+ would be lowered to a B).

If students miss class, they are responsible for obtaining class notes from other students and/or for meeting the professor during office hours. It is also the policy of the Institute that any student who has eight or more absences automatically fails the class.

Except in the case of medical emergencies, absences are not accepted when tests are scheduled; tests cannot be made up. **Furthermore, scheduled times and dates indicated for exams, quizzes, oral presentations, and any other graded assignments cannot be changed for any reason.** Even if more sections of the same class are activated, students may only take exams during the scheduled times and dates for the section they are enrolled in.

Presence during mandatory field trips is especially important for student performance in class. Missing a mandatory field trip, unless for a very serious reason that is communicated to the professor and Umbra Academic Director in a timely manner, will lower students’ final grade by one grade level (i.e., a final grade of a B+ would be lowered to a B).

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### Academic Integrity

All forms of **cheating** (i.e., copying during exam either from a fellow student or making unauthorized use of notes) and **plagiarism** (i.e., presenting the ideas or words of another person for academic evaluation without acknowledging the source) will be handled according to the Institute Academic Policy, which can be found in the Umbra Institute Academic Policies and Conduct Guidelines.

### Classroom Policy

Students are expected to follow the policy of the Institute and demonstrate the appropriate **respect** for the historical premises that the school occupies. Please note that **cell phones** must be turned off before the beginning of each class. **Computers and other electronic devices** cannot be used during class lectures and discussions.

## Schedule of Topics, Readings, and Assignments

### WEEK 1

	<p><i>Course Introduction: structure, format and non-use of traditional methods</i></p> <p><u>Readings</u> N/A</p>
	<p><i>A Framework for learning: Social Constructs of Water.</i></p> <p><u>Readings</u> Greider, T, &amp; Garkovich, L., Landscapes: The Social Construction of Nature and the Environment, 1994</p>

### WEEK 2

	<p><i>Social Constructs of Water: History.</i></p> <p><u>Readings</u> Pain, S., The emperor's new loos, 2016</p>
	<p><i>Social Constructs of Water: Gender.</i></p> <p><u>Readings</u> Cole, Water Worries: An Intersectional Feminist Political Ecology of Tourism and Water in Labuan, Banjo, Indonesia, 2017</p> <p>*Assessment #1 - Identification of Hometown Drinking Water</p>

### WEEK 3

	<p><i>Water and Politics.</i></p> <p><b>Field Lab:</b> Introduction to the project with ARPA <b>Service Learning Project:</b> Introduction to the eco audit project with Umbra</p> <p><u>Readings</u> Wilson, P. The Politics of Concrete: Institutions, Infrastructure, and Water Policy, 2015.</p>
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	<p><i>Water and Power: Vajont Dam.</i></p> <p><u>Readings</u>            Jacobson, &amp; Delucchi, Providing all global energy with wind, water, and solar power, Part I: Technologies, energy resources, quantities and areas of infrastructure, and materials, 2011</p> <p>Kilburn, C. R., &amp; Petley, D. N, Forecasting giant, catastrophic slope collapse: lessons from Vajont, Northern Italy, 2003</p>
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**WEEK 4**

	<p><i>Assessment mini-presentations</i></p> <p>*Assessment #1 DUE</p> <p>*Assessment #2 - Online Activism</p> <p><b>Service Learning Project:</b> Eco-audit planning and organizing.</p>
	<p><i>Bottled Water.</i></p> <p><u>Readings</u>            Bhandari et al., Transgenerational effects from early developmental exposures to bisphenol A or 17 <math>\alpha</math>-ethinyloestradiol in medaka, <i>Oryzias latipes</i>, 2015</p> <p>Wagner, M., &amp; Oehlmann, J. Endocrine disruptors in bottled mineral water: total estrogenic burden and migration from plastic bottles, 2009</p>

**WEEK 5**

	<p><i>Italian 'water culture'</i></p> <p><b>Field Lab:</b> In-depth analysis</p> <p><u>Readings</u>            Black, R., Acqua Minerale Di Sangemini: The Italian Mineral Water Industry Finds a Place at the Table, 2009</p>
	<p><i>Water Panel: Italian 'water culture'</i></p> <p>Mini presentations: *Assessment #2 - Social Activism DUE            *Assessment #3 - Intercultural Sustainability &amp; Innovation</p>

**WEEK 6**

	<p><i>Lake Trasimeno - History.</i></p> <p><u>Readings</u>            Burzigotti, R. The role of Lake Trasimeno (central Italy) in the history of hydrology and water</p>
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	management, 2003
	<p><i>Ethics, Expectations and Project Design.</i></p> <p><b>Field Lab:</b> Preparations for the field trip to the ARPA facilities</p> <p><u>Readings</u> Giardino et al., Application of Remote Sensing in Water Resource Management: The Case Study of Lake Trasimeno, Italy, 2010</p>

**WEEK 7**

	<p><i>Mid-Term Review and Progress Updates</i></p> <p><b>Service Learning Project:</b> A plan of action.</p> <p><u>Readings</u> N/A</p> <p>Assessment #4 - Lake Trasimeno</p>
	<p><b>MID-TERM EXAM</b></p> <p>*Assessment #3 DUE- Intercultural Sustainability &amp; Innovation Presentations</p>

**SEMESTER BREAK**

**WEEK 8**

	<p><i>Invasion Biology</i></p> <p><u>Readings</u> Piscia et al., The invasion of Lake Orta (Italy) by the red swamp crayfish <i>Procambarus clarkii</i> (Girard, 1852): a new threat to an unstable environment, 2011</p> <p>Lorenzoni, M., Mearelli, M., &amp; Ghetti, L., Native and exotic fish species in the Tiber River watershed (Umbria–Italy) and their relationship to the longitudinal gradient, 2006</p> <p>*Lake Fish Species Assignment</p>
	<i>ARPA Staff Lecture - Diatoms</i>
	<i>Field Trip - Lago Trasimeno and Isola Polvese</i>



**WEEK 9**

	<p><i>Watershed Issues: Microplastics.</i></p> <p><u>Readings</u>                  Talvitie, J., Mikola, A., Koistinen, A., &amp; Setälä, O, Solutions to microplastic pollution–Removal of microplastics from wastewater effluent with advanced wastewater treatment technologies, 2017  <i>Sustainability of the Aquatic Resources.</i></p>
	<p><i>Watershed Issues: Pollution.</i></p> <p><u>Readings</u>                  Danovaro, R. et al., Sunscreens cause coral bleaching by promoting viral infections, 2008</p> <p>*Assessment #3 - Intercultural Sustainability &amp; Innovation</p>

**WEEK 10**

	<p><i>Conservation Psychology</i></p> <p><b>Service Learning Project:</b> Reaching the target [audience].</p> <p><u>Readings</u>                  Clayton &amp; Meyers, Conservation Psychology: Understanding and Promoting Human Care for Nature - Chapter 6 (pp. 114-121), 2016</p>
	<p><i>Wine and Water.</i></p> <p><u>Readings</u>                  Zhu et al., A model-based assessment of adaptation options for Chianti wine production in Tuscany (Italy) under climate change, 2016</p>

**WEEK 11**

	<p><i>Water and Climate.</i></p> <p><u>Readings</u>                  Mollema, P., et al., Climate and water budget change of a Mediterranean coastal watershed, Ravenna, Italy, 2012</p> <p>Rasul, G., &amp; Sharma, B. The nexus approach to water–energy–food security: an option for adaptation to climate change, 2016</p> <p><b>Service Learning Project:</b> End of Semester Community EngageGAMES overview with Umbra staff and preparation for event.</p>
	<p><i>Trasimeno Presentations</i></p> <p>Assessment #4 DUE - Lake Trasimeno  <b>Service Learning Project:</b> In-class workshop</p>

	<p><u>Readings</u> Farrell, B., &amp; Twining-Ward, L. Seven steps towards sustainability: Tourism in the context of new knowledge, 2005</p>
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**WEEK 12**

	<p><i>Water Systems and Dietary Choices.</i></p> <p><u>Readings</u> Scarborough et al., Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians and vegans in the UK, 2014</p> <p>Gill, M., Smith, P., &amp; Wilkinson, J. M. Mitigating climate change: the role of domestic livestock, 2010</p>
	<p><i>Before the Flood.</i></p> <p><u>Readings</u> N/A</p>

**WEEK 13**

	<p><b>Service Learning Project:</b> <i>Continuing Sustainability at Umbra Presentations</i></p> <p><u>Readings</u> N/A</p>
	<p><b>Service Learning Project:</b> <i>Continuing Sustainability at Umbra Presentations</i></p> <p><u>Readings</u> N/A</p>

	<p>The Final Exam and Special Academic Events Calendar will be provided later in the semester.</p>
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### Bibliography

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**ENV/FSST/GSCI 320: Water Resources: Environment, Society, and Power**  
**Service Learning Project**  
**Syllabus Appendix**

**What is service learning?**

Service learning is a type of experiential education integrated into a course in which:

- students engage in an organized activity or project aimed to address a community need that is identified in collaboration with the community partner;
- students critically reflect on the link between the experience in the community, course content, and the learning goals; and
- there is reciprocal learning both by the students and by the community partners.

Students will need a certain degree of flexibility, creativity, and self-initiative to realize a service learning project. Organization and open communication in-class with the professor and classmates will be key to student success.

**Service Learning Project Overview**

**Community Partner**

The Umbra Institute is a year-round independent American study abroad program based in Perugia, offering semester, year-long, and summer programs with a variety of academic courses. In its efforts to improve sustainability, Umbra is engaging with its student body to assess opportunities and make the necessary changes.

**Project Description and Goals**

Through observations, data collection and analysis, you will support the Umbra Institute in its efforts to become more sustainable. As part of this project, students will develop, organize, and lead various events and/or workshops to raise awareness about the world's finite resources. At the end of the semester, students will summarize their findings and provide feedback via a strategic plan to Umbra administration.

**Organization, Expectations, and Roles**

A significant amount of time will be dedicated to the service learning project's progress in class. Students will also be required to do research and/or prepare materials outside of class. With the help of the professor, students will be responsible for deciding how to divide the various tasks to ensure each person contributes equally throughout the project. Each student will have:

1. A field journal where he/she will record observations during the two-day field learning experience. The professor will collect the field journals at the mid-term and final exams but may ask for them at random points throughout the course.
2. An individual research project based on data gathered during the two-day field trip.

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At the end of the project, each student will also be asked to complete a Self-Evaluation Form.

### **Student Learning Outcomes**

Through this project, students will:

- critically analyze local water issues and be able to compare these to the global level,
- identify appropriate scientific methods for analyzing lake water quality,
- practice qualitative research methods and analyses,
- develop awareness and skills in intercultural communication, and
- gain a better understanding of the host culture and community.

### **Community EngageGAMES Presentations**

During the Special Academic Events week, the class will give a 25-minute presentation to the Umbra community at the Community EngageGAMES Presentation. The class will work together to share a few words about the course and project, lead a meaningful activity that focuses on the project, and provide a few thoughts about their experience with the project and partner. Students will receive guidelines and presentation order after the mid-semester break. Participation in this event is **MANDATORY** and an integral part of the community engagement grade.

### **Grading Rubric**

The service learning project is worth a total of 10% of the final course grade, which will be divided into three categories:

1. Data collection and analysis
2. Participation and self-evaluation during preparation and workshop delivery
3. Related assessments and presentations

The field learning project is worth a total of 10% of the final course grade, which will be divided into three categories:

1. Field journal entries based on the service learning project
2. Participation in field activities
3. Related assessments, specifically, the independent research project