

## **ENST 320a: Water and Soil Sustainability**

**Units: 4**

**Spring 2019, TTh 2:00-3:20 pm**

**Location: WPH 205**

### **Instructors:**

**Dr. Scott Applebaum**

Lecturer

**Office:** CAS 116

**Office Hours:** TBA

**Email:** [sapplebaum@usc.edu](mailto:sapplebaum@usc.edu)

**Phone:** 213-740-8576 (office)

**Dr. David Ginsburg**

Associate Professor (Teaching)

**Office:** CAS 116

**Office Hours:** TBA

**Email:** [dginsbur@usc.edu](mailto:dginsbur@usc.edu)

**Phone:** 213-740-8576

### **Course Description/Rationale**

Both water and soil are integral to human livelihood, and both are currently under threat. This class presents an overview of the issues related to water and soil sustainability including soil development and management, the hydrologic cycle, the cycling of nutrients through both soil and water, soil and water pollution, and food security related to soil and water issues.

### **Learning Objectives**

- Students will gain in depth knowledge of water in the environment, focusing on how water moves through the environment, how humans use and interact with water and pollution of water
- Students will explore soil science in order to understand how the physical, chemical and biological properties of soil are important to humans and the environment.
- Students will learn how soil and water quality are intimately linked and their importance for food production and security worldwide.
- Learning objectives in this course are aligned with those of the Environmental Studies Program: <https://dornsife.usc.edu/environmental-studies/learning-objectives/>

**Recommended preparation:** ENST 100

### **Course Notes**

This course will use Blackboard for communication, information and turning in assignments. Lecture slides will be made available after the lecture is given. Additional readings may be assigned periodically throughout the semester, and these will be announced in class, posted on Blackboard and via email messages sent to the class. Sometimes computers will be used in class

to work with real life data in excel and run simple simulations – students will be notified when computers are needed. This course involves a lot of in depth reading and critical analysis outside of lecture, as it is a four unit course.

### **Required Readings and Supplementary Materials**

1. Pennington, Karrie L. and Cech, Thomas V., Introduction to Water Resources and Environmental Issues, 457 pp., Cambridge. Referred to below as WREI
2. Brady, Nyle C. and Weil, Raymond R., Elements of Nature and Properties of Soils, Pearson. Referred to below as ENPS

### **Description and Assessment of Assignments**

You will be graded on the basis of your performance on exams, written assignments, group presentations and class participation (e.g., study guide discussions, Blackboard assignments, etc.). Lecture presentations will be posted on Blackboard after the lectures. Exam questions will be drawn from course readings, lecture materials and discussions.

The Final Exam is partially cumulative and will include ~20% of material covered in the first two-thirds of the course; the remaining ~80% of the Final Exam will include only material covered after the second midterm (the last third of the course). If there is a conflict with an exam, you must email the instructor two weeks in advance to see if alternative arrangements can be made (under reasonable circumstances). Otherwise, **make-up exams will not be given, except in extreme emergencies**. If a student misses an exam and/or assignment due to an unexcused absence, they may receive a zero for that portion of the course. During exams, students will NOT be allowed to have notes, books, cell phones, etc. Only pens/pencils and a calculator are required. Failure to comply with exam policies will automatically result in a grade of “0” for that particular exam. (Midterm 1, 2 & Final; 325 total)

Reading guides will involve reading primary literature, answering questions outside of class and turning them in ahead of time, and a discussion of the paper in class and will be assessed for completeness. (5 pts each; 30 pts total)

The blog post assignment requires students to find a recent scientific article and write a summary (similar to a blog post or press release) that is intended for the general public. (25 pts)

Students will carry out some basic soil testing with some unknown samples in class, process the data and do a brief write up identifying the soil. The write-up will include comment on the health of the unknown soils based on what we have learned in class. (30 pts)

Group presentations will involve 2-3 students giving a presentation on different methods for water conservation and sustainability that the city of LA could use to decrease its dependency on imported water. You will use the information learned watching these presentations in order to complete an analysis of the plan that the city of LA has created to decrease importation of water. (see course schedule, below; 40 pts)

The City of LA has a plan to reduce imported water use to no more than 50% of total use by 2035. You will read this plan and write up an analysis of it. The analysis should focus on whether or not you think this is the best plan, explaining your reasoning, and whether or not you think the plan is feasible. (40 pts)

Attendance at ONE of the following field trips is REQUIRED (10 pts; note: you may attend both field trips, however course credit will be assigned to only ONE trip):

- Hyperion Wastewater Treatment Plant (Thu, Oct 18, 12:30-4:00 pm)
- LA Compost/Garden School Foundation workday at the 24<sup>th</sup> St Elementary School (Sat, Nov 3, 10:30-2:30 pm)

### Grading Breakdown

Assignment	Points	Grade %
Midterm 1	100	20%
Midterm 2	100	20%
Final	125	25%
Science blog post	25	5%
Unknown soil write-up	30	6%
Group presentations	40	8%
LA water plan analysis	40	8%
Reading guides (6 total)	30	6%
Field trip attendance	10	2%
<b>TOTAL</b>	<b>500</b>	<b>100%</b>

### Grading Scale

Your final grade in ENST 320a will be determined using the grading scale below. Note, however, this scale may be adjusted depending on progress of the class.

A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

### Additional Policies

Routine attendance and active participation are an important part of each class session. For the best learning experience, you are expected to have read the course materials (see below) by the date it is discussed in class. Roll will be taken periodically in the form of thought exercises, reading assignments, and in-class questions. You are responsible for information, announcements, date changes, and any other course material presented, regardless of your participation in the classroom.

As mentioned above, if there is a conflict with an exam, you must email the instructors *2 weeks in advance* to see if arrangements can be made (under reasonable circumstances). Otherwise, make-up exams will not be given except in extreme emergencies. Note that make-up exams will be

more difficult (because the instructors will need to rewrite the exam specifically for you!), so it is in your best interest to take the exam on the day it is scheduled. If you have an emergency on an exam day, you must get in touch with us before the exam. Assignments will not be accepted late.

Additionally:

- Come to class prepared
- Be respectful of the instructors and other students in class
- Please leave cell phones outside the classroom or turned off
- If you have to miss class make sure you arrange to get notes and announcements

### **Course Schedule: A Weekly Breakdown**

For the best learning experience, you are expected to have read assigned material by the date it is discussed in class. Article and supplemental readings will be posted online. The readings and schedule of topics may be adjusted throughout the semester depending on progress of the class.

## **TBA**

### **Statement on Academic Conduct and Support Systems**

#### **Academic Conduct:**

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](http://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

#### **Support Systems:**

*Student Counseling Services (SCS)* – (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. [engemannshc.usc.edu/counseling](http://engemannshc.usc.edu/counseling)

*National Suicide Prevention Lifeline* – 1 (800) 273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. [www.suicidepreventionlifeline.org](http://www.suicidepreventionlifeline.org)

*Relationship and Sexual Violence Prevention Services (RSVP)* – (213) 740-4900 – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. [engemannshc.usc.edu/rsvp](http://engemannshc.usc.edu/rsvp)

*Sexual Assault Resource Center*

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: [sarc.usc.edu](http://sarc.usc.edu)

*Office of Equity and Diversity (OED)/Title IX Compliance* – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. [equity.usc.edu](http://equity.usc.edu)

*Bias Assessment Response and Support*

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. [studentaffairs.usc.edu/bias-assessment-response-support](http://studentaffairs.usc.edu/bias-assessment-response-support)

*The Office of Disability Services and Programs*

Provides certification for students with disabilities and helps arrange relevant accommodations. [dsp.usc.edu](http://dsp.usc.edu)

*Student Support and Advocacy – (213) 821-4710*

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. [studentaffairs.usc.edu/ssa](http://studentaffairs.usc.edu/ssa)

*Diversity at USC*

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. [diversity.usc.edu](http://diversity.usc.edu)

*USC Emergency Information*

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. [emergency.usc.edu](http://emergency.usc.edu)

*USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.*

Provides overall safety to USC community. [dps.usc.edu](http://dps.usc.edu)