Foundations of Ecosystem Restoration

ES/EEMB 128, EEMB 228
Course Syllabus | Spring 2018

INSTRUCTOR INFORMATION
Instructor
Lisa August-Schmidt  augustschmidt@ucsb.edu
she/her/hers  Office: 1109 Noble Hall  Office hours: Wed 1:30-3pm

Teaching Assistants
Maddie Nolan  m_nolan@lifesci.ucsb.edu  Labs: Tues 3-4:50pm; Th 3-4:50pm
she/her/hers  Office: 1109 Noble Hall  Office Hour: Tues 12:30-1:30
Laura Schultheis  laura06@ucsb.edu  Labs: Wed 9-10:50am
she/her/hers  Office: 1113 Noble Hall  Office Hour: Wed 11:15-12:15pm
Stephanie Ma  stephanie.ma@lifesci.ucsb.edu  Labs: Wed 3-4:50pm
she/her/hers  Office: 1113 Noble Hall  Office Hour: Thurs 3-4pm

LOGISTICAL INFORMATION
Lecture
Tu/Th 11am-12:15pm in Bioengineering 1001

Lab
Tu 3-4:50pm; W 9-10:50; W 3-4:50pm; Th 3-4:45pm in BSIF 1239*
*Most weeks lab will convene at CCBER restoration sites – NOT in the classroom. Weekly lab locations will be announced in lecture, lab and on Gauchospace.

COURSE DESCRIPTION
Ecosystem restoration involves making decisions: Which species / communities / ecosystems / landscapes do we value? What should and can be restored? What is the most effective way to move an ecosystem from a degraded state to a healthy, self-sustaining state?
In this course, we will apply ecological theory to the practice of ecosystem restoration. We will discuss the biological, political, and cultural context in which restoration occurs, why restoration is important, and how we can use the scientific method and what we know about how ecosystems function to improve restoration success.

Course Goals
By the end of this course, you will be able to
• Describe the characteristics of a restored ecosystem
• Critique perceptions of ‘naturalness’
• Apply basic ecological and evolutionary theory and processes for restoration
• Evaluate constraints on achieving restoration goals
• Assess restoration success analytically
COURSE MATERIALS & RESOURCES

Website
We will have a website on GauchoSpace under ENVS 128. Even if you are registered through EEMB, you will appear on this website. Please check this regularly for announcements, updates, and changes to the lecture schedule.

Reading
Required readings from the primary literature will be posted to GauchoSpace. I will also suggest readings focused on the application of ecological theory from *Foundations of Restoration Ecology*, 2nd Edition (2016) Margaret Palmer, Joy Zedler, and Donald Falk, eds. Island Press (ISBN 978-1-61091-697-4). There is no required textbook for this course.

GRADING

**Lecture**: 700 pts
- iClicker – 50 pts
- Problem set 1 – 100 pts
- Problem set 2 – 100 pts
- Hometown restoration project – 250 pts
- Final problem set – 200 pts

**Lab**: 300 pts
- Participation – 50 pts
- Group lab introduction – 30 pts
- Group presentation – 100 pts
- Lab Write Ups – 120 pts

**Total**: 1000 points

**iClicker**
I will use iClickers to check in with students throughout lecture to make sure you’ve understood the day’s material. iClicker data will also be used take attendance. Your iClicker grade will be based on attendance:
- 2 points for each lecture attended (excluding guest lectures), up to 30 points
- 5 points each for attending mandatory guest lectures (5/8 and 5/24), 10 points total
- 10 points for attending in-class career panel (6/5)

**Problem Sets**
Take home problem sets will cover concepts from lecture, reading, and labs. You will discuss and apply ecological theory to restoration decision making. Problem sets will be posted to GauchoSpace at least one week before they are due. The first two problem sets are worth 140 points each. The final problem set is worth 200 points.

**Final project: Hometown restoration**
Throughout the quarter you will be working on a report documenting an existing restoration project in your hometown. You will identify the project goals, discuss the constraints to achieving those goals, rate the project based on SER’s International Standards for Ecological Restoration,
and assess the extent to which the project has been or is likely to be successful. This is a great opportunity to learn more about restoration projects going on near you and possibly future volunteer experience or job opportunities in restoration!

See lab syllabus for details on lab assignments

COURSE POLICIES & EXPECTATIONS

Attendance
Students are expected to attend all lectures and all labs. Lectures and labs will begin promptly. You must attend the lab you are registered in*. If, in the event of an emergency, you must miss a lab, contact your TA as far in advance as possible to inquire about attending a different section that week.

* Crashers/switchers please attend the section you hope to enroll in during Week 1.

Late work
Assignments turned in after the deadline will be docked 5% if turned in later that day, or 10% each day thereafter. For example, an assignment due at 5pm on Thursday that is submitted an hour (or even five minutes) late will be docked 5%. If that assignment is uploaded to Gauchospace the following Saturday, we will dock 20%. Assignments will not be accepted more than 5 days after the due date.

Personal responsibility
If personal or academic issues arise that interfere with your ability to perform at your best in this course, let us know sooner rather than later – and before assignments are due. We are passionate about restoration ecology and want you to succeed in this course, but our hands will be tied if you wait to reach out until after the assignment due date passes.

Grade disputes
Sometimes we make mistakes. If you have a concern about how a test or assignment was graded, you may submit a written regrade request explaining why you feel your grade is inaccurate. Regrade requests must be received within one week after the assessment was returned. NB: When reviewing your request, we will do a full regrade. Please be aware that your final score may go down after a careful re-reading.

Technology
You may use laptops, tablets or other devices to take notes or otherwise participate in class. However, attempts at multi-tasking are extremely distracting to those around you. Students may be asked to leave if their use of technology detracts from the class learning environment.

Academic integrity
You are responsible for the originality of all work bearing or associated with your name. This includes work submitted via your Gauchospace account and responses associated with your iClicker registration. Be proud of your academic accomplishments. Cheating, plagiarism, and collusion cheapen your learning experience and diminish the value of each of our degrees. You can find more information about UCSB’s procedures for dealing with dishonesty here.
Disabled Students Program (DSP)
Students with a documented physical, learning, or psychological disability have specific needs and are eligible to receive accommodation from the Disabled Students Program. Services offered by DSP include reading services, notetaking, testing accommodation, and course registration assistance. Not all disabilities are visible. Learn more about whether you might be eligible for DSP support and how to apply [here](#).

Campus Learning Assistance Services (CLAS) – Writing Services
All students can take advantage of peer writing tutors for help on writing assignments during any stage of the writing process. Writing tutorials are available with or without an appointment. Find the CLAS Writing Services’ current schedule [here](#).

Counseling & Psychological Services (CAPS)
Students may benefit from mental health services at Counseling & Psychological Services, whether they are coping with trauma, struggling with the current political climate, or feeling stressed or distressed. CAPS offers confidential individual and group counseling, crisis intervention and stress management services for all registered students. [Learn more](#) about getting started with CAPS or speak with a clinician 24/7 at (805) 893-4411.
<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Focus</th>
<th>Reading</th>
<th>Assignment Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Welcome: What is Ecological Restoration?</td>
<td>SER Int'l Standards Sect. I</td>
<td>1/18</td>
</tr>
<tr>
<td>2</td>
<td>Setting Goals for Restoration</td>
<td>Recommended: Ch. 3 ForeE</td>
<td>1/22</td>
</tr>
<tr>
<td>3</td>
<td>Resting in the Anthropocene</td>
<td>Recommended: Ch. 4 ForeE</td>
<td>1/29</td>
</tr>
<tr>
<td>4</td>
<td>How do Ecosystems Change over Time?</td>
<td>Recommended: Ch. 17 ForeE</td>
<td>2/5</td>
</tr>
<tr>
<td>5</td>
<td>Nutrient Dynamics of Soil</td>
<td>Recommended: Ch. 5 ForeE</td>
<td>2/12</td>
</tr>
<tr>
<td>6</td>
<td>The Importance of Soil</td>
<td>Recommended: Ch. 6 ForeE</td>
<td>2/19</td>
</tr>
<tr>
<td>7</td>
<td>What is a Weed? Invasion Control in Theory</td>
<td>Recommended: Ch. 8 ForeE</td>
<td>2/26</td>
</tr>
<tr>
<td>8</td>
<td>Why and How to Restore Animals</td>
<td>Recommended: Ch. 11 ForeE</td>
<td>3/5</td>
</tr>
<tr>
<td>9</td>
<td>Inclusion Control in Practice</td>
<td>Recommended: Ch. 12 ForeE</td>
<td>3/12</td>
</tr>
<tr>
<td>10</td>
<td>Clueing Community Assembly</td>
<td>Recommended: Ch. 13 ForeE</td>
<td>3/19</td>
</tr>
<tr>
<td>11</td>
<td>Choosing &amp; Sourcing Species for Restoration</td>
<td>Recommended: Ch. 15 ForeE</td>
<td>3/26</td>
</tr>
<tr>
<td>12</td>
<td>Restoring as a Tool for Restoration</td>
<td>Recommended: Ch. 16 ForeE</td>
<td>4/2</td>
</tr>
<tr>
<td>13</td>
<td>Animal Restoration in Practice: Case Studies</td>
<td>Recommended: Ch. 17 ForeE</td>
<td>4/9</td>
</tr>
<tr>
<td>14</td>
<td>Guest Speaker: Coral Reef Restoration</td>
<td>Recommended: Ch. 18 ForeE</td>
<td>4/16</td>
</tr>
<tr>
<td>15</td>
<td>Restoration in the Anthropocene</td>
<td>Recommended: Ch. 19 ForeE</td>
<td>4/23</td>
</tr>
<tr>
<td>16</td>
<td>How do Ecosystems Change over Time?</td>
<td>Recommended: Ch. 20 ForeE</td>
<td>4/30</td>
</tr>
<tr>
<td>17</td>
<td>Setting Goals for Restoration</td>
<td>Recommended: Ch. 3 ForeE</td>
<td>5/7</td>
</tr>
<tr>
<td>18</td>
<td>Practical Realities of Restoration in Ecological Restoration</td>
<td>Recommended: Ch. 21 ForeE</td>
<td>5/14</td>
</tr>
<tr>
<td>19</td>
<td>Guest Panel: Diverse Careers in Ecological Restoration</td>
<td>Recommended: Ch. 22 ForeE</td>
<td>5/21</td>
</tr>
<tr>
<td>20</td>
<td>Restoring in the Anthropocene</td>
<td>Recommended: Ch. 23 ForeE</td>
<td>5/28</td>
</tr>
</tbody>
</table>

Due Wed. 6/13 at 3pm

**Final Problem Set**

- Group Presentation
- Hometown Restoration SER Evaluation
- Problem Set #1 lab #4 Write Up
- Problem Set #2 lab #2 Write Up
- Problem Set #3 lab #3 Write Up
- Lab #2 Write Up
- Lab #1 White Up
- Lab #7 White Up
- Lab #6 White Up
- Lab #5 White Up

 achievable