San José State University
College of Social Science/ Environmental Studies Department
Envs 187, Introduction to Environmental Restoration
Section 1, Fall 2016

Course and Contact Information

Instructor:	Miranda Melen
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Office Hours:	Tuesday/Thursday 9:45am – 10:15am, or by appointment
Class Days/Time:	Tuesday/Thursday 10:30am – 11:45am, Saturday Field Trips 10am - 1pm
Classroom:	Central Classroom Building 100
Prerequisites:	ENVS 001, GE B2, 100W
Finals Day:	Thursday, December 15, 2016, 9:45am – 12:00pm

Course Format

This course has classroom lectures, fieldwork, and online assignments, quizzes, and exams. This course requires the daily use of a computer with Internet connectivity. Course materials such as syllabus, assignment instructions, quizzes, and exams are on the Canvas Learning Management System (Canvas) course website at http://sjsu.instructure.com. You are responsible for regularly checking Canvas for announcements and emails from your instructor.

Course Description

Interdisciplinary art and science of restoring destroyed or degraded habitats. Emphasis on the interplay of ecological principles, policy, public involvement and economics in the planning, implementation and monitoring of restoration plans. Fieldwork and independent research required.

This course is designed to introduce you to the interdisciplinary field of environmental restoration. Scientific restoration efforts date back to the prairie restorations in the 1930s at the University of Wisconsin Arboretum. Only recently has restoration been recognized as an important scientific, political, and public endeavor. Although the physical restoration of a site is based on our technical knowledge of ecological systems, successful restoration efforts often include biologic, economic, political, regulatory, and public participation elements.

Interest in restoration has been spurred by at least two developments:

1. Government regulations have required that project proponents compensate ("mitigate") for damage they cause to the environment, and
2. The public has recognized that in order to preserve endangered species, protect ecosystem services, and improve our living environment, we need to restore habitats that have been degraded or destroyed.

This course is taught in three parts and will cover the following overarching themes:

- **Ecology**: the ecological principles that form the basis of the field of restoration
- **Theory**: the theoretical underpinnings of restoration and methods of practice
- **Implementation**: the process of restoration (design, implementation, and monitoring) using field methods and techniques

Course Learning Outcomes (CLO):

Upon successful completion of this course, students will be able to:

- Understand and apply the ecological principles that are central to the field of restoration
- Understand the history of restoration science and how it has helped develop the body of ecological knowledge and influenced current restoration techniques
- Understand restoration theory and apply restoration practices to a range of habitats and restoration projects
- Understand the stages of successful restoration projects and evaluate the quality of projects from the perspective of planning and design, implementation, monitoring and adaptive management
- Learn methods and techniques for baseline assessment and monitoring progress of a project toward restoration goals

Program Learning Outcomes:

Upon successful completion of this course, students will be able to:

- Write a logical analytical paper using good writing style and construction supported by appropriate research (PLO 1 - Qualitative Environmental Literacy)
- Determine, apply and interpret appropriate basic statistical or other quantitative analyses to environmental data (PLO 2 - Quantitative Environmental Literacy)
- Develop proficiency in the interdisciplinary sustainability principles that are the foundation of environmental studies; they will know the key environmental challenges facing the planet, know relevant interdisciplinary information about these challenges, and be able to develop/identify feasible solutions (PLO 3 - Content Environmental Literacy)
- Productively conduct group/team work to deliver professional quality presentations and reports (PLO 4 - Professional Skills: 4A)
- Demonstrate in-depth knowledge and skills in a science or technical field (PLO 5 - BS Competency)

Required Texts/Readings

Textbook:

Greipsson, Sigurdur. 2011. Restoration Ecology. Jones & Bartlett Learning, LLC. Sudbury, MA. ISBN: 978-0-7637-4219-5. Text is available at the SJSU bookstore and from online retailers.

Other Readings:

Additional readings available on Canvas.

Other Technology Requirements:

This course requires daily access to a computer with Internet connectivity, word processing (Microsoft Word is required for peer-reviewed assignments), presentation, and spreadsheet software.

Library Liaison:

Peggy Cabrera is our liaison for Environmental Studies. Reach her at: peggy.cabrera@sjsu.edu

Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including but not limited to preparing for class, participating in course activities, and completing assignments. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

This is a lecture and field course that requires extensive writing, reading, and research outside of the classroom. **This is a four-unit course, which means you are expected to devote 12 hours of work per week to this class through participation in the classroom, field trips, homework, and independent study**. You must prepare for each class session by completing the appropriate readings or work before lecture. You will be working within the body of knowledge of the fields of ecology and restoration, and will conduct independent research as well as work in a group to present a case study of a local restoration project. A group presentation in the field and a final report is the culmination of this work. Finally, exams and quizzes will allow you to demonstrate your knowledge of the materials covered in class.

Assignments:

The table below is a ***tentative*** list of assignments for the class. Assignments may be changed, added, or deleted as needed. This class is fast-paced, time consuming, and difficult because it covers significant material in preparation for more advanced work in Advanced Restoration (Envs 191) and your professional career. Your effort in this course and understanding of the material will be evaluated in weekly quizzes, a series of group assignments, exams, case studies, and participation in the classroom and at field trips.

Assignment	**Point Value**	**Learning Objectives**
Individual Assignments:		
Ecosystem Summary, draft	50	PLO 1, PLO 3, PLO 5
Ecosystem Summary, final	50	PLO 1, PLO 3, PLO 5
Case Study Class Discussion	50	PLO 3
Field Trips	150	PLO 3
Class Assignments	20	PLO 3
Restoration Volunteer Connection	15	PLO 3
Performance Review 1	5	
Performance Review 2	5	
Exams:		
Reading Quizzes	50	PLO 3
Research Practical	100	PLO 2, PLO 3, PLO 5
Field Practical (Final Exam)	100	PLO 2, PLO 3, PLO 5
Group Assignments:		
Ecosystem Group Outline	5	PLO 4
Ecosystem Group Paper, Draft Report	50	PLO 1, PLO 4, PLO 5
Peer-Review Draft Report	50	PLO 1, PLO 4, PLO 5
Ecosystem Group Paper, Final Report	100	PLO 1, PLO 4, PLO 5
Field Trip Case Study Class Presentation	100	PLO 4, PLO 5
Field Trip Case Study Field Presentation	100	PLO 4, PLO 5
Estimated Total	**1000**	**points**

University policy F69-24 at http://www.sjsu.edu/senate/docs/F69-24.pdf states, "Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading."

Final Examination:

The final exam is a field practical that tests your ability to identify plants or parts of trees, take accurate measurements, and demonstrate your use of restoration methods learned in this course. Any equipment, methods, or topics that are covered in the field trip lectures and the field trips (or anything announced in class as potentially being on the field practical) could be on the final exam.

More details can be found in University Policy S06-4 at http://www.sjsu.edu/senate/docs/S06-4.pdf which states that "There shall be an appropriate final examination or evaluation at the scheduled time in every course, unless specifically exempted by the college dean who has curricular responsibility for the course."

Grading Information

Individual grades are assigned based on the student's ability to demonstrate their knowledge of the material, provide evidence to support their work, and follow assignment instructions. Group grades are assigned based on the overall assessment of the group work and the peer-reviews. Final grades take into account assignment and exam scores, and class participation.

Grading Criteria:

All writing assignments and the research practical will be graded according to the following standards for assessing the quality of the content and the clarity of expressing concepts.

Grade	Criteria
A	Extremely effective organization of paragraphs and paper; interesting, varied sentences; good grammar (usage, punctuation); no spelling mistakes; excellent response with superior supporting evidence; logical analysis, reasoning, and explanation; clear mastery of concept; excellent citation form and use.
A-, B+	Very effective organization of paragraphs and paper; interesting, good sentence structure and variation; good grammar (usage, punctuation, etc.); few spelling mistakes; does not read like a first draft; good, solid response that uses strong supporting evidence; very good reasoning and explanations; great citation form and use.
B	Reasonably effective organization of paragraphs and paper; serviceable prose; numerous errors of grammar or spelling; reads like a first draft; solid response that meets minimum required by assignment; reasoning and explanations are adequate; okay citation form and use.
C	Structurally disorganized; paragraphs lack topic sentences or are not developed effectively; awkward sentence structure; poor grammar; poor spelling; response is accurate but cursory, and does not meet the minimum required for completeness; some inaccuracies or reasoning flaws; response is too general, lacks specific evidence; all sources cited but form is incorrect.
D	Structurally disorganized; paragraphs lack topic sentences or are not developed effectively; awkward sentence structure; poor grammar; poor spelling; response does not effectively address the question; response fails to support assertions evidence; major flaws in reasoning; explanations are unclear; displays inadequate understanding of content; lack of citation.
F	Response is missing or not submitted, or does not address the question.

All presentations, discussions, and field trips will be graded according to the following standards for assessing the level of participation and ability to conduct good science.

Grade	Criteria
A	Presentation is of appropriate length; content is of excellent quality and goes beyond the basics; facts are accurate and well explained; flow of presentation is logical and well planned with clear practice and rehearsal between group members; pictures and text are well displayed and easy to read; presenter has a good speaking voice (volume and speed) and makes frequent eye contact with audience; does not use note cards; presenter is dressed in appropriate attire. Contributes freely to discussion; speaks clearly; ideas are presented in a thoughtful and logical manner; uses strong evidence to support reasoning; clear mastery of content and material being discussed; scientific language is used when speaking; asks questions and proposes reasonable solutions. Fieldwork is technically accurate; attire is appropriate for weather and terrain conditions; demonstrates enthusiasm for field experience and working collaboratively; asks questions and is helpful to others; clear mastery of scientific method and collection techniques.
A-, B+	Presentation is of appropriate length and good content; facts are accurate and very well explained; flow of presentation is logical and well planned with clear practice and rehearsal between group members; pictures and text are well displayed and easy to read; presenter has a good speaking voice (volume and speed) and makes eye contact with audience; does not use note cards; presenter is dressed in appropriate attire. Contributes often to discussion; ideas are presented in a thoughtful and logical manner; uses evidence to support reasoning; scientific language is used when speaking; asks questions and proposes reasonable solutions. Fieldwork is technically accurate; attire is appropriate for weather and terrain conditions; displays real interest in field experience and working collaboratively; asks questions and is helpful to others.
B	Presentation is of appropriate length and content; facts are accurate; flow of presentation is logical; pictures and text are easy to read; presenter has a good speaking voice (volume and speed) and makes eye contact with audience; presenter is dressed in appropriate attire. Contributes to discussion with good ideas; supports reasoning with evidence; some scientific vocabulary is used; asks some questions. Fieldwork is technically accurate; attire is appropriate for weather and terrain conditions; shows interest in field experience and working collaboratively; asks questions.
C	Presentation is of minimal length; content is adequate; facts are somewhat accurate; presentation is organized; pictures and text are readable; presenter uses notes and is challenging to hear; presenter is dressed in appropriate attire. Needs to be prompted to contribute to discussion; supports reasoning with evidence; some scientific vocabulary is used. Approaches field experience with adequate interest; some collaboration; depends on some direction and instruction from others; does not take initiative in a group setting; demonstrates an adequate understanding of the field methods.
D	Presentation is too short; content is lacking basic information; facts are not all accurate; presentation requires organization; pictures and text are challenging to read; presenter uses notes; presenter is not dressed in appropriate attire. Needs to be prompted to contribute to discussion; does not supply evidence or more than a basic answer. Demonstrates little enthusiasm as if "just going through the motions"; little interest in collaboration; dependent on instruction; does not understand the field techniques or methods.
F	Clear lack of group participation in presentation. Missing or lack of any participation in discussions. Missing or unable to complete field methods.

Determination of Grades:

99-100% = A+	88-89% = B+	78-79% = C+	60-69% = D
94-98% = A	83-87% = B	73-77% = C	59 and below = F
90-93% = A-	80-82% = B-	70-72% = C-	

Your grade will be accessible via Canvas or in office hours.

Extra Credit:

In an effort to grade all students on the same level fairly, this course does not have extra credit options.

Assignment Weights:

Individual Assignments = 34.5%
Exams = 25%
Group Assignments = 40.5%

Penalty for Late or Missed Work:

All assignments are due on the day that they are listed on Canvas. Assignments turned in late will be dropped a full letter grade, and another full letter grade each day following. Assignments more than one week late will not be accepted. If 4 or more assignments are turned in late you will not pass this class. There are no late quiz allowances.

Classroom Protocol

Participation:
Students are expected to arrive on time and be seated for the start of the class period. If a student is sick or knows they will be late to class or need to leave early, email the instructor prior to class as a courtesy.

Participation is an important element to learning. Questions and comments about the lecture are welcome during the presentation. Please use office hours for questions about grades or personal concerns.

Inappropriate behavior or disrespect towards other students and the instructor will not be tolerated and be reported to the University. Expulsion from the class can occur after the first warning.

Technology:

Cell phones and laptops are not allowed during lecture or field trips for personal use, however laptops may be used to take notes, or be used during class discussions and group work.

Formatting of Assignments:

- Single spaced with 1" margins
- Times New Roman, 12pt font
- Page numbers in lower right-hand corner of page

Research Practical:

The Research Practical is a take-home and open-note style written exam designed to test student abilities to critically think and respond to real-life problems in the field of conservation and restoration. You may form study groups and discuss the questions with other students in the class, however all material you submit must be your original work.

Main goals for Research Practical:

- Test students on using concepts learned in lecture and critically thinking about a situation and applying their knowledge to a new experience
- Test students on their ability to completely answer a question and justify their reasoning with supportive evidence
- Test students on their ability to complete scientific searches online and research new topics
- Test students on their ability to cite sources and create a reference list

Field Trips:

This is a field course with five field trips. All field trips are to local restoration sites within Santa Clara, San Mateo, Santa Cruz, and Alameda Counties. Field trips are on Saturdays and you must be onsite from 10am to 1pm (travel time not included). Field trip case

studies are presented by student groups and will require students to be familiar with their sites prior to their field trip in order to conduct a successful field presentation. It is the student's responsibility to find time in their schedule to visit their case study site outside of school hours. Carpooling is critical for restricted parking at field sites.

Field trips are an essential part of this course and where you learn the practical restoration techniques. *You may miss one field trip without penalty by emailing the instructor for permission one week prior to your absence.* If you miss a field trip without instructor knowledge, your grade will go down a full letter grade. Students who miss three field trips will not pass this course.

Field trips pose potential risks, including but not limited to:

- Driving to and from field site
- Uneven terrain, unpaved surfaces
- Extreme weather (wind, rain, temperature fluctuations)
- Insects, animals, plants

Proper clothing and closed-toe shoes for walking and hiking must be worn for all field trips. It is also important to stay hydrated and wear sun protection.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on **Office of Graduate and Undergraduate Programs' Syllabus Information web page** at http://www.sjsu.edu/gup/syllabusinfo/"

Envs 187 / Introduction to Environmental Restoration
Fall, 2016, Course Schedule

All lectures are on Tuesdays and Thursdays with field trips on Saturdays. In-class assignments are not listed, but are included in each class. Topics, readings, assignment due dates are subject to change, depending on the needs of the course and will be announced in class. It is the student's responsibility to keep up to date with changes in this tentative schedule. Readings and online quizzes are due at 8am on the assigned date. Assignments are due by 11:59pm on the assigned date unless otherwise posted on Canvas.

Course Schedule

Week	Date	Topics	Readings	Potential Quizzes	Assignments
1	Th 8/25	L1: Intro to Restoration Ecology			
2	T 8/30	L2: Ecosystem Structure	Chapter 1	Syllabus Quiz	Start: Ecosystem Summary **Due: Canvas profile photo**
2	Th 9/1	L3: Ecosystem Function and Disturbance	Chapter 2	Chapter 2 Quiz	
3	T 9/6	L4: Biodiversity	Chapter 3	Chapter 3 Quiz	
3	Th 9/8	L5: Succession Theory	Chapter 4	Chapter 4 Quiz	
4	T 9/13	L6: Assembly Theory	Chapter 5	Chapter 5 Quiz	**Due: Ecosystem Summary, draft**
4	Th 9/15	L7: Landscape Ecology	Chapter 6	Chapter 6 Quiz	Start: Case Study 1
5	T 9/20	Case Study 1	Case Study 1		**Due: Case Study 1**
5	Th 9/22	FT Lecture: Zayante Sandhills			Start: Group Report
5	**S 9/24**	**Field Trip – Quail Hollow Quarry**			
6	T 10/4	L8: Soil	Chapter 8	Chapter 8 Quiz	**Due: Ecosystem Group Outline**
6	Th 10/6	Field Trip Presentation			
6	**S 10/8**	**Field Trip – Palo Alto Baylands**			
7	T 10/11	L8.5: Soil Erosion			**Due: Palo Alto Baylands Performance Review 1**
7	Th 10/13	L9: Hydrology	Chapter 13	Chapter 13 Quiz	
8	T 10/18	L10: Forests	Chapter 11	Chapter 11 Quiz	
8	Th 10/20	Field Trip presentation			

Week	Date	Topics	Readings	Potential Quizzes	Assignments
8	**S 10/22**	**Field Trip – Bailey Mitigation**			
9	T 10/25	L11: Keystone and Indicator Species	Chapter 12	Chapter 12 Quiz	**Due: Ecosystem Summary, Final Paper** **Due: Bailey Mitigation Performance Review 1** Start: Research Practical
9	Th 10/27	L12: Invasive Species	Chapter 7	Chapter 7 Quiz	
10	T 11/1	*Lecture*			**Due: Research Practical**
10	Th 11/3	*Lecture*			
11	T 11/8	*Lecture*	*REMEMBER TO VOTE!*		**Due: Ecosystem Group Paper, Draft Report**
11	Th 11/10	Guest Speaker: South Bay Salt Pond Restoration Project, John Bourgeois		SBSP Restoration Quiz	
12	T 11/15	Guest Speaker: River Restoration Project, Kevin MacKay			
12	Th 11/17	Field Trip presentation			**Due: Peer-Review Draft Report**
12	**S 11/19**	**Field Trip – Skyline Tree Farm**			
13	T 11/22	L13: Restoration Planning	Chapter 14.1, 14.2	Chapter 14.1, 14.2 Quiz	**Due: Skyline Tree Farm Performance Review 1**
14	T 11/29	L14: Restoration Implementation	Chapter 14.3, 14.4	Chapter 14.3, 14.4 Quiz	
14	Th 12/1	Field Trip presentation			
14	**S 12/3**	**Field Trip – Redwood Grove**			
15	T 12/6	L15: Restoration Monitoring	Chapter 14.5-7	Chapter 14.5, 14.6, 14.7 Quiz	**Due: Ecosystem Group Paper, Final Report** **Due: Redwood Grove Performance Review 1**
15	Th 12/8	*Lecture and review*			**Due: Performance Review 2**
16	Th 12/15	*Final Examination, 9:45am – 12:00pm*			