Marine Restoration Ecology FAMA 5327 / MARB 6327  
Department of Life Sciences  
Fall 2017

A. COURSE INFORMATION

Course number/section: FAMA 5327 / MARB 6327  
Class meeting time: T/R 11:00-12:15  
Class location: Bay Hall (BH) 202  
Course Website: https://bb9.tamucc.edu/

B. INSTRUCTOR INFORMATION

Instructor: Dr. Jennifer Pollack  
Office location: Science Lab 2 (low tan building between Blucher Institute and boat barn)  
Office hours: T/Th 12:30-3:00 or by appointment (let me know you are coming)  
Telephone: 825-2041  
E-mail: Jennifer.pollack@tamucc.edu

C. COURSE DESCRIPTION

Catalog Course Description
Overview of the rapidly expanding practice of restoring degraded marine, estuarine, and coastal ecosystems. Teaching methods will include lectures, discussion, paper critiques, field visits, and restoration plans. Course will explore ecological theory as it applies to restoration, restoration planning and implementation strategies, and controversies surrounding the practice of restoration.

Extended Course Description
This course involves active engagement in restoration activities, including implementation of a Rapid Assessment Model (RAM) for wetland mitigation projects and participation in one salt marsh planting event.

D. PREREQUISITES AND COREQUISITES

Prerequisites
None

Corequisites
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)
None
Optional Textbook(s) or Other References
Supplemental material will be provided by the instructor.

Supplies
None

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Demonstrate understanding of ecological principles used for restoration of marine, estuarine and coastal ecosystems.
2. Critically evaluate the reasons for marine ecosystem restoration and the role of restoration within the larger context of natural resource management.
3. Collect, organize, analyze, and interpret field data and summarize interpretations using equations, graphs, figures, and in writing.
4. Demonstrate an understanding of restoration planning and implementation strategies.
5. Describe issues (ecological and social) associated with marine ecosystem restoration.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Course topics will be covered in instructor-led lectures, class discussions, guided writing exercises, and field/laboratory activities. Powerpoint lectures, papers and book chapters are posted on Blackboard to supplement course topics. Students are expected to have read the assigned papers ahead of time and come prepared to participate in class discussions. Grading will be based on two exams, two paper critiques, one ethics essay, and a final RAM project.

H. MAJOR COURSE REQUIREMENTS AND GRADING

(1) Discussion.

- Instructor-led jigsaw. Ahead of time the class will be split into 4 different teams. Students from team 1 will read paper 1, students from team 2 read paper 2, etc. and each student will prepare brief (1 page) of notes about their paper to be handed in during class. On the jigsaw discussion day, each team of students will meet for 10 minutes to discuss the main points of their paper and to discuss the presentations they will make to their jigsaw group. Teams will then be split apart into jigsaw groups, with one student...
from each team. For the next 20 minutes, students will present their team paper to other members of the jigsaw group. 10 minutes will then be devoted to writing a brief jigsaw group summary (bullet points ok) of the most salient points of the papers. For the last 20 minutes, one member from each jigsaw group will be assigned to discuss the most important points addressed in their summary. We will conclude with a full-class discussion. Jigsaw group discussions will be graded based on critical thought, creativity, and completeness.

- **Student-led discussions.** Ahead of time you will sign up as a duo or trio to lead a specific discussion topic. Students will be responsible for self-organizing into groups, but the composition of each group should be centered on a topic of common interest among its members. **If the class has difficulty in self-grouping, Dr. Pollack will intervene as needed.** As a group, you will select 1 paper / case study for the class to read ahead of time. You must provide the paper to Dr. Pollack at least 1 week in advance to post on Blackboard! Discussion leaders should formulate and write down 4 or 5 discussion questions ahead of time based upon the assigned reading. In class, discussion leaders will present a brief (less than 5-minute) opening statement about the topic. The statement should set the stage for the discussion questions. If you are not a discussion leader, you are responsible for bringing a related paper / case study to class to supplement the discussion.

(2) **Rapid Assessment Model (RAM) project.**

- **Background:** Compensatory mitigation is required for activities permitted under Section 404 of the Clean Water Act that impact wetlands to replace loss of wetland function or area. In Texas, compensatory mitigation carried out on coastal, state-owned lands falls under the jurisdiction of the Texas General Land Office (TGLO). Traditionally, determination of the success of a wetland mitigation project has been based solely on the percent vegetation cover. The Rapid Assessment Method (RAM) is a multivariate tool for evaluating the condition of a wetland that is efficient, cost effective, and can be conducted in a short period of time.

- **Project topic:** As part of this project, you will utilize the RAM Standard Operating Procedure (SOP) to evaluate natural reference and/or mitigation sites. Working with a partner, each of you will select a site to conduct your RAM; for one site, you will act as lead scientist, and for the other, you will assist your partner. Decide as a team how you want to select your two sites: (e.g. 2 salt marsh sites? 1 marsh and 1 beach? 1 restored and 1 natural? etc.). **1 page project proposals are due to Dr. Pollack by 5:00 pm on Thursday, October 12** to discuss ideas and gain approval for their tentative plan including ideas for: habitat type, comparison to be made, science behind the issue, broader impacts of issue, etc.

At the completion of the project, **each student** is responsible for handing in the completed RAM worksheet for your site, and a 5 page report (double spaced, 12 pt font, 1 inch margins) that (1) describes the rationale for your study (why did you do what you did?), (2) provides brief methods (how did you perform the study, dates, etc.), (3) compares and contrasts the RAM results between your site and your partner’s (what were the results of your study?), (4) evaluates the efficacy of the RAM model as a management tool for the TGLO (e.g. What
were the pros and cons? Was it useful for your habitat type? Is it a valid tool? Could it be improved? How? Was it easy to follow? Too simplified?), and (5) based on this evaluation, provides some guidance or suggestions (if necessary) to modify/improve the RAM tool. References do not count toward page limit. More details will be provided in class. Due by 5:00 pm on Thursday, November 16.

- **RAM Grading**
  - 10% - Quality of project outline
  - 15% - Quality and completeness of RAM project worksheets
  - 50% - Quality of evaluation of the RAM as a management tool
  - 25% - Overall quality of written paper

- **Notes**
  - Each team should consult with Dr. Pollack on the development and progress of their project. Changes in plans due to unforeseen circumstances may occur, but any major change to the project proposal must be approved by Dr. Pollack.

(3) **PSA Project.**
- **Description:** Teams of 2-3 students will develop a 7-9 minute Public Service Announcement (PSA) video that highlights a present-day coastal or marine restoration issue. The issue of choice is up to the team members, but the video should be designed to educate the general public. Feeling particularly creative? Try a music video PSA! (see Jeremy Long YouTube station for examples). Each group will present their video to the class at the end of the semester for peer grading. Students must be prepared to field questions from classmates who will be representing the general public reacting to the rollout of the PSA. Students will be responsible for organizing their own teams, but the composition of each group should be centered on topics of common interest among its members. If the class has difficulty in self-grouping, Dr. Pollack will intervene as needed.
- **Project topics:** Coastal or marine restoration issues to be addressed are open and do not need to have been discussed during the class, and they can be important on a local, regional, and/or global scale. However, it is imperative that each team properly identify its audience and cater its message appropriately. **Teams will meet individually with Dr. Pollack on Tuesday, September 24 to turn in their 1-page project proposal and to discuss ideas and gain approval. Project proposal should include ideas for: headline for the issue, science behind the issue, broader impacts of issue, solutions.**
- **PSA Organization:**
  - Headline for the issue – Strong initial statement - capture audience in first 10 seconds!
  - Science behind the issue – Why is topic important to field of marine restoration ecology?
  - Public’s level of current awareness – **This must include interviews with non-classmates.** (Get approval of person interviewed and make sure they know the purpose of video!)
  - Broader impacts of issue – Why should public really care?
  - Offer solutions – How can groups of disparate interests work towards solution?
- **PSA Grading**
  - 10% - Quality of the project outline
- 10% - Timeliness of presentation (7 minute minimum and 9 minute maximum)
- 30% - Quality of the ecological science presented
- 40% - Clarity and creativity of video piece
- 10% - Creativity and efficacy of solutions offered

**Notes**
- Each team should regularly consult with Dr. Pollack on the development and progress of their project. Changes in plans due to unforeseen circumstances may occur, but any major change to a video plan must be approved by Dr. Pollack.
- It is imperative that each student participate fully in the development of the PSA. It will be quite obvious as to whether each student has a complete understanding of their team project, especially during the question and answer period that follows.

(4) **Final Exam.** This take-home exam will be distributed during the last day of class (Tuesday, December 5) and will be due at 5:00 pm on Monday, December 11. The format will include data interpretation and long-answer questions and will cover all material from the semester. Late exams turned in after the deadline will incur a penalty of 5% for each day after the specified due date. Exams more than 3 days late will not be accepted. Further details about the Final Exam will be discussed in class.

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<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Discussion (participation and lead)</td>
<td>30 (15, 15)%</td>
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<tr>
<td>RAM project</td>
<td>25%</td>
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<tr>
<td>PSA project</td>
<td>25%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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# I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>WEEK (DAY)</th>
<th>T</th>
<th>TH</th>
<th>KEY DATES</th>
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<tbody>
<tr>
<td>Week 1 (8/29)</td>
<td>Class overview, syllabus, expectations, etc.</td>
<td>Why we restore</td>
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<tr>
<td>Week 4 (9/19)</td>
<td>What we restore</td>
<td>PSA Team meetings with Dr. Pollack</td>
<td>1 page PSA proposal due Thurs 9/21</td>
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<td>Week 5 (9/26)</td>
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<td>Student discussion (1): wetlands/salt marsh restoration</td>
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<td>Week 6 (10/3)</td>
<td>Introduction to RAM</td>
<td>FIELD TRIP: RAM demonstration</td>
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<td>Week 7 (10/10)</td>
<td>How we restore</td>
<td>Student discussion (2): seagrass restoration</td>
<td>1 page RAM proposal due Thurs 10/12</td>
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<td>Week 8 (10/17)</td>
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<td>Student discussion (3): mangrove restoration</td>
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<tr>
<td>Week 9 (10/24)</td>
<td>FIELD TRIP – oyster reef restoration</td>
<td>Student discussion (4): beaches, dunes, islands</td>
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<td>Week 10 (10/31)</td>
<td>Monitoring &amp; Adaptive Resource Management</td>
<td>Student discussion (5): oyster reef restoration</td>
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<tr>
<td>Week 11 (11/7)</td>
<td>Guest lecture: Ryan Rezek (Ph.D. candidate, CMSS)</td>
<td>PSA working day</td>
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<td>Week 12 (11/14)</td>
<td>Case study: Tampa Bay</td>
<td>Student discussion (6): coral reef restoration</td>
<td>RAM project due Thurs 11/16</td>
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<tr>
<td>Week 13 (11/21)</td>
<td>Case study: Grey infrastructure</td>
<td>No class - Thanksgiving break</td>
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<tr>
<td>Week 14 (11/28)</td>
<td>Student discussion (7): large marine vertebrates (turtles, dolphins, fishes)</td>
<td>PSA releases day 1</td>
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<tr>
<td>Week 15 (12/5)</td>
<td>PSA releases day 2 Distribute FINAL EXAM</td>
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<td>EXAM due 5:00 pm Mon 12/11</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.
J. COURSE POLICIES

Attendance/Tardiness
Attendance is mandatory. Students are expected to attend all classes and labs. Should you miss a lecture session, it is your responsibility to find out what you missed, get notes, learn about changes in the syllabus, etc. There are no excused absences. A missed grade will result in a score of ‘0’ for that assignment. Students with a university approved scheduled absence (athletics, military duty, etc.) must contact the lecture instructor well in advance of a scheduled absence. Exams may be taken early in those specific cases. Students who do not arrange to take exams ahead of time will not be eligible for this special consideration. A written excuse from the university department involved is required.

Late Work
Assignments are due before lecture begins each day. Assignments turned in late will incur a 10% penalty per day (including weekends). Assignments turned in on the due date but after the specified time will be considered 1 day late.

Extra Credit
None

Cell Phone Use
Cell phone use is not permitted at any time.

Laptop Use
Laptop use is allowed during lectures but not during exams.

Food in Class
Allowed if not disruptive to class activities.

Participation
This course has a large participation component, including classroom discussions and field activities. Consistent absences and not taking an active role in classroom discussions and activities will have a negative effect on your grade.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct
or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. **Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.** Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at
http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.
http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

**L. OTHER INFORMATION**

- **Academic Advising**
The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.