Valdosta State University, Department of Biology
BIOL 4020/6020: Special Topics in Conservation: Coastal and Marine Biodiversity Syllabus- Maymester 2016: 4 credit hours

Instructor: Dr. Joshua S. Reece
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Email: jreece@valdosta.edu (preferred contact method) Office hours: MWF 11:00am-12:00pm
Class will meet in BSC 1202 from 8-10:50am and in BSC 2073 from 12-2:50pm MTWRF

***This syllabus is subject to modification at the instructor's discretion.
You will be notified of any and all changes***

Course Overview

Welcome to Bio 4020/6020. This course will expose you to the coastal biodiversity of the southeastern United States. This is primarily a field course that complements lecture material. You will be exposed to the ecosystems and habitats of the southeastern coast, their biogeography, ecology, evolutionary history, and inhabitants. A major theme of this course will be scientific inquiry so that you learn not only the ***what*** and ***where*** of coastal biodiversity, but the ***why***, which can be understood through ecological and evolutionary inquiry. You will get dirty, muddy, and wet in this course, but you will see some of the most amazing natural areas in the southeast, including verdant seagrass beds, coastal marshes and hardwood hammocks, estuaries, vibrant coral reefs, and the open ocean.

Course Objectives, Educational Outcomes, and Linked Assignments

The broad objectives of this course are to introduce you to the ecosystems, habitats, flora and fauna of the southeastern coastal plain, and the processes, especially climate change and sea-level rise, that have and will continue to shape these systems. First, I will go over three major topics that apply to each system: highly interactive species, climate change/sea-level rise, and ecosystem functioning and services. Second, I will introduce you to the major ecosystem types characteristic of Georgia and Florida coasts. Within each habitat type, you will learn about each of these three major topics described above, and you will visit examples of each community. This course addresses Department of Biology educational outcomes 1, 2, and 5 (http://ww2.valdosta.edu/ catalog/1314/ugrad/documents/UG_131-146.pdf) and VSU General Education Outcomes 4, 5, and 7. Below are the main course objectives and activities designed to accomplish those objectives.

Objectives	Linked Assignments
Learn characteristic coastal natural communities of the southeastern US	Lecture material, 2 extended field trips sampling natural communities
Learn to identify and understand the ecological and evolutionary role of characteristic flora and fauna	Lecture material, examination of preserved specimens, and sampling of live animals in the field
Understand ecological patterns and processes important to coastal ecosystems	Lecture material, small group projects on each characteristic natural community
Develop an appreciation for the natural world and about science!	Field trips to coastal and marine habitats
Work collaboratively in small groups	Gathering and analyzing data for group projects
Improve scientific writing and experimental design	Paper in peer-reviewed journal format

Course Prerequisites and expectations

The course prerequisite is BIOL 3250. No student will be able to work a job during the span of this course, or enroll in any additional courses, as participation in this course will require overnight and weekend trips that are mandatory. This is a major, but very rewarding, commitment on the part of the student, and no additional accommodations will be made.

Course Credits

BIOL 4020/6020 is a four credit course to be taught during the May Summer session.

Required Texts and Materials

We will utilize peer reviewed literature for this course; there is no textbook.
For Florida, you should consult the Florida Natural Area Inventory guide to natural communities, which can be viewed here: http://fnai.org/natcom_accounts.cfm. A similar guide to Georgia's natural communities can be viewed here: http://georgiawildlife.com/sites/default/files/uploads/wildlife/nongame/pdf/natural_communities_thumbnail_accounts.pdf. We will use computer labs when possible, but you are encouraged to bring and use your laptop when we have in-class time devoted to literature searches, group projects, and for working on your scientific paper. During the field trips you are encouraged to bring a laptop or tablet.

Basis for Final Grade- This is subject to modification depending on the instructor's prerogative and the progress of the class.

Assignment	Group or Individual	% of final Grade	Points each	Points total
Deportment (behavior)	Individual	5%	5	5
Quizzes (4)	Individual	20%	5	20
Field Notebook / Log	Individual	5%	5	5
Field Practicals (best 2 out of 3)	Individual	20%	10	20
Small Group Lecture	Group	10%	10	10
Lit Review/Synthesis/Peer Review	Group topic, individual write-up	10%	10	10
Research Proposal/Peer Review	Group topic, individual write-up	***Included in full paper grade		
Scientific Paper and peer review	Group topic, individual write-up	30%	30	30
Total		**100%**		

Students will have until the end of the following week to contest any grades; after that time grades are final. Any questions about grades must be made in writing through email.

- Your behavior is a factor in your grade. Treat your instructor and your fellow students with courtesy and respect. Deportment also includes complaining about the conditions. This is a field course, and I told each of you that it would be extremely uncomfortable at times (hot, bugs, sunny, etc.). Deal with

it, and deal with it quietly or your grade will suffer.

- Quizzes will be 10 questions in multiple choice and short-answer format and will encompass material from lecture, assigned readings, and discussions in the field.
- Your field notebook will include an entry for every day in the field. For each natural community type visited, students will identify two highly interactive species, one specific example of how climate change has or will affect this community, one specific example of how sea-level rise has or will affect this community, and one specific example of an ecosystem service provided by this natural community.
- Field practicals will be short answer quizzes of organismal ID, ecosystem features and processes discussed during field trips.
- Students will form small groups of 2-3 individuals for oral presentations on a group project. For the group project, students will present on one or a small suite of related natural communities and summarize the impacts/role of 1) climate change, 2) sea-level rise, 3) highly interactive species, and 4) ecosystem services. Students will evaluate each group member's contribution and students will be penalized if they did not contribute equally to a group project. You will basically give the lecture on the ecosystems you choose. You will see me model the lecture, and then observe the graduate students, then you will make up your own lecture. The lecture will be a group grade which will be based on presentation style, accuracy of material, and depth of coverage/synthesis of the topic.
- You will write a literature review based on the material you used for your lecture and covering the same four topics listed above. Importantly, this is to be a review and synthesis, not just a book report or term paper (we will talk about this more in class). While you will work on this as a group, each group member will write their own review/synthesis. I will model how to evaluate each others' papers, and then your peers will provide feedback on your paper for you to revise before you turn it in to me for a grade.
- Next, you and your group will identify what you believe (after having read about this ecosystem and the research that has been conducted) is the most important research that needs to be done. You will individually write a full proposal (about six pages double spaced) with hypotheses/questions, detailed methods, expected results, and why the proposed work is important. You will receive peer evaluations for this paper as well.
- Lastly, you will combine the literature review and the research proposal into a full paper. Groups will collect data together, but **every individual will write their own scientific paper based on the group project.** The paper will be written and formatted for an appropriate scientific journal. Papers will be judged on mechanics (use of citations, grammar/syntax, length and format), accuracy, and depth of coverage/synthesis of the topic. You will turn in a rough draft to me, and after addressing my comments, you will turn in a final draft for a grade.

***Graduate students will be subject to more rigorous assessments and will lead additional field lectures on ecosystems and natural communities.**

Attendance Policy: Students who miss two days of field trips without an excuse cannot receive a lab grade above a "D" (60%).
Grade Scale: 100-90% A; 80-89% B; 70-79% C; 60-69% D, 0-59% F

Student Conduct

You will be respectful of your classmates and your instructor. Cell phone use is not allowed during class, especially not when I am lecturing in the field. You will not smoke cigarettes at any point during our field trips. You must also be able to make long rides in the car (at least 4 hours) without bathroom breaks. An inability to do so means that you are unable to take this course.

Course Policies: Technology and Media

Email: Please email me only from a VSU email account. I am unable to respond to emails from non-VSU accounts.

Classroom Devices: You may NOT use your cell phones in class under any circumstances. You may bring cell phones on field trips, but no calls are to be taken when we are working in the field, and no unauthorized use (texting, social media, etc.) of cell phones will be allowed while in the field. Phones may be used for photographing or taking GPS points when permission is given to do so.

Accommodations Statement

Students with disabilities who are experiencing barriers in this course may contact the Access Office for assistance in determining and implementing reasonable accommodations. The Access Office is located in Farber Hall. The phone numbers are 229-245-2498 (V), 229-375-5871 (Video Phone), and 229-219-1348 (TTY). For more information, please visit http://www.valdosta.edu/student/disability or email access@valdosta.edu.

Academic Integrity

Academic integrity is the responsibility of all VSU faculty and students. Students are responsible for knowing and abiding by the Academic Integrity Policy as set forth in the Student Code of Conduct and the syllabus. All students are expected to do their own work and to uphold a high standard of academic ethics. Cheating (including plagiarism) will not be tolerated. The instructor reserves the right to dismiss you from the course without credit if you are caught cheating. You will be respectful of your instructor and your fellow students at all times, or you will be dismissed from the class and potentially the course.

Tentative Schedule, BIOL 4020, Maymester 2016. Dates in bold text are full-day activities; otherwise each day will adhere to the formal lecture and laboratory start and end times.

Dates	Topic:	Assignments
May 12	VSU- Intro to course, go over syllabus; Discuss: Ecosystem Engineers and highly interactive species; Restoration Ecology, Ecosystem Services and Function	Discuss: Soule et al. (2003), Estes et al. (2011), Brock et al. (2009); Wortley et al. (2013); Cardinale et al. (2012); Boyd 2007; fill out liability forms for field stations, field trips, and sign up for group projects; climate change surveys. Will identify and discuss papers on cognitive benefits of being in nature.
May 13	VSU- Climate Change and Sea Level Rise; how to write a scientific paper	Read: Reece et al. (2013a), Noss (2011); Bellard et al. (2012); Root et al. (2003), Parmesan and Yohe (2003), Poloczanska et al. (2013), Strauss et al. (2012)
May 16	Prep for Sapelo	Natural History Review, read pages 511-567 of Edwards et al. 2012; draft of Literature Review due by beginning of class; must email to a peer that I designate; high tide wave pool lab exercise
May 17-19	**3 day Field Trip to Sapelo**	**Field Practical #1; do peer review of literature review**
May 20	VSU	No Class: READ (seriously, read this time): Pages 567-587 of Edwards et al. 2012; Work on revising lit review over the weekend. Email me a 1 paragraph research proposal by 5pm today.
May 23	VSU- Prep for Keys- sea turtle lecture	Meet at 9am, end around noon. Complete natural community guides and print out 15 copies. Read Reece et al. (2013b); Work on research proposal; have 100% of your sources downloaded for research proposal- assume zero internet access from this point on….
May 24	**Leave for Saint Augustine**	**Washington Oaks Gardens State Park Bella Vista Trail (maritime hammock and coastal scrub), Matanzas Inlet (Coastal Beaches), camp at Anastasia State Park (Maritime Dunes); Field Practical #2**
May 25	**Overnight stop Seahorse Key; Gulf coast island, estuaries, bird rookeries**	**Gulf coast islands; late night hike looking for cottonmouth rattlesnakes! Quiz #2.**
May 26	**Melbourne Beach**	**Out late with sea turtles on the nesting beach; camp at Sebastian Inlet State Park**
May 27	**Everglades, then Key Largo**	**Quiz #3; Dinner at MarineLab, orientation, water quality activity; coral reef ecology discussion**
May 28	**Key Largo**	**Swim test, lagoon snorkel, coral reef field trip, diversity indexing**
May 29	**Key Largo**	**Quiz #4; Seagrass, mangroves; seagrass field trip; reef fish; sponges**
May 30	**Key Largo**	**Coral reef ecology; Climate Change Survey part II; Field Practical #3, dinner out**
May 31	**Leave Key Largo**	**Drive to VSU, long drive, home late**
June 1	No class	
June 2	Last Day of Class	Field Notebooks due, scientific paper due

Release and Waiver of Liability

Please read and sign the following:

I acknowledge that participation in field excursions involves some risks of injury, illness, and/or loss of personal property, despite the best intentions and responsible actions of participants and leaders. I agree to release and forever discharge Valdosta State University and the Board of Regents of the University System of Georgia, its members individually, and its officers, agents and employees from any and all claims, demands, rights and causes of action of whatever kind or nature, arising from and by reason of any and all known and unknown, forseen and unforseen bodily and personal injuries, including death, damages to property and the consequences thereof, resulting from my participation in the field excursion(s) described above.

I certify that, to the best of my knowledge, I am in good health and physically capable of undertaking an intensive field biology exercise.

I have read the above statement carefully before signing. Further, I understand that this Release and Waiver of Liability shall be effective for a period of one year from this date.

_____

Print Full Name

_____ _____

Signature Date

I understand that the $300 non-refundable deposit I have paid for the field trips associated with this course is a commitment to remaining in the Maymester Special Topics in Conservation: Coastal Biodiversity course and attending all of the field trips and that failure to pay this deposit by noon on Thursday, April 15, 2016 will result in cancellation of my enrollment in this course. Attach your check to this signed form. The check will be made out to the "VSU Foundation" and hand-delivered to Dr. Reece or to one of the secretaries in the Biology office.

_____ _____

Signature Date

Travel Guide for Sapelo Island (2 nights):

Tuesday, May 17: We will meet at 9am at the loading bay of Bailey Science center. We will leave by 9:30am. On the way there, we will visit a restaurant called Mud Cat Charlies near Darion (seafood). It is about a 2.5 hour drive to Mud Cat Charlies (arriving around 12pm). We will leave by 1:30pm and drive the remaining ~1.5 hrs to the Ferry to Sapelo Island, which departs at 3:30pm on the dot. Once we get to the island (~4pm-ish), we will go to our dorm rooms and get settled. We will pack up some snacks for the evening hike, and make our own dried fruit/nut mixes. Around 5:00pm we will drive down to Nanny Goat Beach for a long hike on the beach. At 6:30pm we will drive to the post office to observe high tide. Around 7pm or so we will come back to the dorms for pizza dinner.

Wednesday, May 18: If you are an early riser and want to see the sunrise, we will get up around 6am for coffee and a walk down to the beach. Breakfast will be at 7am and will consist of eggs, grits, bacon, muffins, French toast, and sweet rolls. We will leave the dorms at 845am for a hike, which will take about three hours. We will be back at the dorms for lunch, which will consist of sandwiches (cold cuts, cheese, PB&J) and chips. At 1pm we will head to the Post Office dock to view low tide. We will spend some time at the dock, and then go back to the dorms for some free time to work on your papers. Around 4:30pm we will hike the trail through coastal ecosystem near the dorms. We will have dinner around 7pm, which will be tacos.

Thursday, May 19: We will go see sunrise at 6am (optional) and have breakfast at 7am (same fair as the previous day), and then clean up and pack up from the dorms so that we are ready to leave. We will go on a driving tour of the west side of the island to see the inner barrier islands, Indian Mounds, and Moses Hammock. We will return to the dorms for lunch (around noon). We will clean up and pack, and have some free time. We will be at the pier to board the ferry at 2pm, take the 2:30pm ferry and drive back to Valdosta. We should be back at the University by around 7pm. We will get dinner somewhere on the way home (bring money, it will probably just be fast food).

You cannot bring alcohol with you. Let me know if you are vegetarian or not. I will purchase food for meals but you will cook for yourselves (as a group) and we will bring coolers for drinks and snacks. For clothing, dress in layers and assume you will get dirty. Plan to hike where there are stinging nettles and brambles (wear shoes with socks). Check the weather before we leave, and dress to be outdoors and to get dirty. We will spend the majority of the time outdoors and in the sun and bugs, so bring appropriate clothing, sunscreen, and bug spray.

Checklist:

- Liability Waiver
- $5 for Ferry
- Snacks
- hat
- Small hiking pack
- Field guides you might want
- **Water bottle**
- Flash light
- Bug spray and sun screen
- Field notebook and something to write with
- You do NOT need to bring bed linens
- Sunglasses
- Hiking shoes
- Two changes of clothes (you will get dirty!)

- Sandals
- Light towels and a beach towel
- Toiletries
- Camera
- Cash for lunch at Mud Cat Charlies and fast food dinner on the way home

Do NOT bring:

- Bed linens
- Alcohol

Travel Guide to Sea Horse Key, Melbourne Beach, the Florida Keys, and Anastasia Island State Park:

Tuesday, May 24th: We will meet at the loading bay of Bailey Science Center at 8am. We will drive approximately 4 hours to St. Augustine. We will visit Washington Oaks Gardens State Park Bella Vista Trail. We will hike the 1.7 mile long nature trail through maritime hammock and coastal scrub. If there is time, we will walk the beach at the Matanzas Inlet on our way to Anastasia Island State Park, where we will camp for the night. We will probably do sandwiches and snacks for lunch. We will eat out for dinner that night, you will be responsible for your own meals.

Wednesday, May 25th: After a camp breakfast (dried goods) and a morning hike on the beach, we will drive 3-4 hours to get to a Ferry that will take us over to the Seahorse Island. Information on the island can be found here: http://skml.clas.ufl.edu/. Along the way down we will stop for lunch. There is a full kitchen and refrigerators on the island, but we will have to bring our own food- I already purchased spaghetti. The Ferry will be ready for us to load at 245pm, and will depart at 3pm. We will have dinner on the island and spend the night in the dorms. There may be another group on the island, and we will be sharing the dorms (which will not be luxurious!) with them. There are few bathrooms and almost no privacy, deal with it. You will need to bring your own linens and towels and toiletries, which you will have with you for the trip anyway. That night from 730pm until 1030pm, we will listen to a presentation and then go on a guided hike to view cottonmouth snakes, which do something on this island that they do nowhere else in the world…..(it is perfectly safe, no one has ever been bitten by a snake on this island). We will view the beaches and wetlands on the island and depart the next morning.

Thursday, May 26th: The Ferry to depart arrives at 10am, but we will need to be up early enough to clean up and pack. We will then drive about 5 hours to Melbourne Beach. We will either get fast food on the way or stop at a park and make sandwiches. Once we get to Melbourne Beach, we will meet Dr. Ehrhart at 6pm and listen to some background on the nesting beaches here, I will buy pizza for everyone, and once it gets dark we will take an evening hike to see nesting loggerhead turtles. It will be a late night. We will then drive 45 minutes to Sebastian Inlet State Park to camp for the night. You will each bring your own tent (feel free to share).

Friday, May 27th: We will pack up camp and drive to Key Largo, about a 5 hr drive. On the way, we will stop at Everglades National Park to see the visitor Center at Ernest Coe Visitor Center, and if there is time, hike the Gumbo Limbo Trail and boardwalk. We will arrive at Key Largo by 4pm, and have dinner there. Information on our location in Key Largo can be found here: http://marinelab.org/index.html. Note that most meals will be provided while at the MarineLab station.

4:00 PM Arrive, orientation
6:00 PM Supper
7:30 PM DISCUSSION: Coral reef ecology
8:45 PM ACTIVITY: Water Quality

Saturday, May 28th
8:00 AM Breakfast
9:00 AM Swim test, gear orientation
10:00 AM Lagoon snorkel
11:00 AM DISCUSSION: Seagrass Ecology
12:15 PM Lunch
2:00 PM Field Trip: Coral reef ecology #1
6:00 PM Supper
7:30 PM ACTIVITY: Diversity Indexing Lab
8:45 PM Climate change discussion- Reece leads

Sunday, May 29th
8:00 AM Breakfast
9:00 AM FIELD TRIP: Seagrass/mangrove ecology
12:15 PM Lunch
2:00 PM FIELD TRIP: Rodriguez Key with diversity indexing (HT @ 3:34 PM)
6:00 PM Supper
7:00 PM LAB: Sponge Spicule Identification Prep
7:30 PM DISCUSSION: Field Identification of reef fish and reef fish survey
8:45 PM LAB: Sponge Spicule Identification

Monday, May 30th
8:00 AM Breakfast
9:00 AM FIELD TRIP: Coral reef ecology #2 with fish survey
12:15 PM Lunch at Hideout (restaurant next door to MarineLab)
1PM: We will leave this time relatively open for the rest of the day, depending on what the group wants to do. We will be on our own for dinner as well.

Tuesday, May 31st
9am: We will depart and meet for breakfast somewhere. We will drive approximately 8-9 hours to VSU. I will not see you again after we unpack.

*Sequence and content of field trips subject to change due to weather and group size considerations.

Checklist:

- A tent: feel free to share a tent with others, but if you don't have a tent, get one. If you do not acquire a tent, you will be miserable sleeping outside with the mosquitos….
- A very good rain jacket. We hike in the rain- deal with it.
- Small hiking bag
- Coffee mug (something that won't break easily)
- Sunblock (SPF 30 or higher)
- Insect repellent
- Toiletries (shampoo, soap, toothpaste, etc)
- Motion sickness medicine (bonine and/or dramnamine)
- Any medications you need
- Ibuprophen/Tylenol- you'll need it.
- Change for snacks and soda machines
- **Water bottle – they will force you to buy one from them if you do not bring your own, this is**

MANDATORY

- Camera
- Sleeping bag or twin bed linens and a pillow
- 2 towels (one for shower and one for boat)- don't bring large beach towels, they will not dry quickly enough
- Personal clothing and swimwear
- Hat
- Old t-shirts or rash guards for snorkeling (REQUIRED). If you shoulders are not covered, you are not allowed on the boat, no exceptions
- Windbreaker or rain coat
- Plastic bag to carry wet items home
- Sweatshirts if you get chilly easily
- You do NOT need snorkeling gear, it is included in your program. If you have nice gear, bring it, but if you have a cheap set, just use their rental gear- it will be better
- You can bring a wetsuit if you want but they are also available for rent
- Money for meals (bring some cash for smaller establishments- no more than $100 in cash)
    - Three fast food meals
    - Two nice restaurant meals

Do NOT bring:

- a lot of food
- dive gloves or dive knives, fishing equipment
- weight belt
- speargun

Rubrics: All rubrics are subject to modification until the assignment is presented to you in class, at which time the rubric will be final.

Rubric For Field Notebook

Worth 5 points.

Your field notebook is your way of keeping notes in this class. In it, you should record your observations of each specific field site and of the natural communities present at that site. For each entry, you should record at least two highly interactive species, one specific example of how climate change has or will affect this community, and one specific example of how sea-level rise has or will affect this community. In addition, you should mention one key ecosystem service provided by this community.

Your Field Notebook will be graded using the following rubric:

Record of every community visited at every field site:	.5 points
Brief description of each natural community:	1 point
Named two highly interactive species characteristic of each natural community:	.5 point
Climate Change:	1 point
Sea-Level Rise:	1 point
Ecosystem Service:	1 point
Total:	**5 points**

What to Expect for Field Practicals:

You will have three practicals in the field, but only two will count so you can drop your lowest field practical grade. The field practicals will be short answer and vary between approximately 10 and 20 questions. We will all walk around as a group, each person carrying a notepad and something to write with. You may not use your notes or any external materials during a practical. I will ask everyone a question, such as, "what is this plant, characteristic of the ecosystem we are in today" and you will write down the name of the plant. Or perhaps I will ask, "what is the federally endangered species that is endemic to this natural community?" These will all be topics that we have gone over in lecture or discussion before taking the field practical. You will write your answers down, and I will collect and grade them. They will be worth 10 points each, for a total of 20 points or 20% of your final grade.

Small Group Oral Presentation Rubric:

Students will form small groups of 2-3 individuals to generate a lecture on ecosystem types. There is a list of ecosystem types and dates for presentations in the syllabus. You will be able to see me demonstrate how to give a lecture, and receive one from the graduate students before you have to develop your own lecture as a group. Your group will present on one or a small suite of related natural communities and summarize the impacts/role of 1) climate change, 2) sea-level rise, 3) highly interactive species, and 4) ecosystem services. You will need to look up scientific papers for this information – you will not find what you need on google or Wikipedia. Students will evaluate each group member's contribution and students will be penalized if they did not contribute equally to a group project. This penalty can be up to a letter grade. The oral presentations will be between 15 and 30 minutes, and will include a handout to be delivered to the class (examples can be found here: https://www.dropbox.com/sh/e2ggikdr31b4tnh/AABq_rUXiO9HhmOlWapSApQza?dl=0). You will give your presentations in the field. Students will be judged on presentation style, accuracy of material, and depth of coverage/synthesis of the topic. The group can decide if one person will present or if it will be split among several presenters. Your oral presentation will be graded as follows:

Quality of handout (spelling, grammar, appearance)	2 points

Presenter style (eye contact, volume, enthusiasm)	2 points
Quality and accuracy of information presented	5 points
Completeness (addressed all four topics)	1 point
Total	**10 points**

Rubric for Literature Review

Your literature review will be based off of the information you gathered for your lecture, which should lean heavily on the use of peer-reviewed literature. Keep in mind that this is not a term paper on four points (Your group will present on one or a small suite of related natural communities and summarize the impacts/role of 1) climate change, 2) sea-level rise, 3) highly interactive species, and 4) ecosystem services). Instead, you need to tell me a story. The story will hit all of these four points by drawing on examples from the literature. Here is one way to think about it:
Term paper style: Smith (2014) showed that salt marshes erode away when sea-level rises. Yoder (2013) showed that beaches erode away too.

Review/synthesis style: Sea level rise can pose many threats to coastal ecosystems. Both salt marsh habitat (Smith 2014) and beach ecosystems (Yoder 2013) show dramatic loss of area over the past several decades do to sea level rise.

See the difference? The synthesis is an interpretation of the literature, not just a review/restating of it. You will receive peer review on your literature review prior to turning it in to me for a grade, and after your initial grade, this literature review will become the first half of your scientific paper. The length should be 5-10 pages double spaced 12 point Times New Roman font with 1 inch margins.

Conforms to the topic outlined above in bold text:	2 points
Quality, novelty, and accuracy of information presented:	2 points
Use of the peer-reviewed literature:	3 points
Synthesis of material	1 point
Grammar, syntax and spelling:	1 point
Peer review:	1 point
Total:	**10 points**

Rubric for Research Proposal

The research proposal will identify what you and your group agree is the most important research to address for the ecosystem that you have chosen. You need to briefly make a case for why the research is needed and important (this should come out of your literature review). You need to propose a clear question or hypothesis, methods that are feasible and will clearly address that hypothesis, expected results, and why the proposed work is important. The length is approximately 3-5 pages (same font/margins/spacing as other assignments). You will receive peer review on this, but not a formal grade because it will be integrated into the full paper (see below).

Rubric for Scientific Paper

Each individual will write a scientific paper that is either based on your group project or a project that you develop yourself (obviously, it is less work to build off of your group project but you do not HAVE to write your paper on that project). **The topic of your paper** will be the same as that of your group project, and will focus on one or a small suite of related natural communities and summarize the impacts/role of 1) climate change, 2) sea-level rise, 3) highly interactive species, and 4) ecosystem services. You will have to get your topic approved before you can start working on it, and to avoid overlap, topics will be

reserved on a first-come basis, which means that the first group to be approved for Coral Reefs will be the only group able to work on Coral Reefs, and so on until every group has a different natural community. Note that by "summarize" I do not mean search Wikipedia and paraphrase. I mean look into the primary scientific literature and synthesize previously published work. We will talk about this more in class. You will also peer review each other's work. Each of you will review two of your classmates' rough drafts, which means that you will each have input from two of your classmates on your paper. The quality of your peer review will be factored into your grade (see point totals below).

Your scientific paper will have the same structure as most of the papers we have read in class. It will be a review or synthesis paper, because you are probably not collecting original data on which to publish. So, look at the review and synthesis papers we have read. The first half of your paper should essentially be your literature review, and the second half will be your research proposal. Make them flow, and do not simply cut and paste them together. The idea here is for you to learn how reading the literature feeds into experimental design. The best ideas in science come from what has already been done! You should format your paper to be submitted to the Florida Scientist, a journal of the Florida Academy of Science (https://www.dropbox.com/s/qdrqip5seq8u5zc/Guide_for_Authors_Florida%20Scientist%206-22-2015.pdf?dl=0). You will include the following sections: Abstract, Introduction and Background, Rationale for Proposed Work, Methods, Potential Results, and References. Additional sections may be required by the journal but will be minor sections. You may subdivide the major sections as you see fit. If your paper fails to conform to the journal requirements, it may be rejected and you will receive a zero. This assignment is 30% of your grade, so don't let that happen to you! As for length, do not ask me how long it needs to be: you will have read several papers and will be familiar with their average length. Overall, the following rubric will be used to grade your scientific papers:

Conforms to journal instructions to authors:	4 points
Abstract effectively summarizes the entire paper:	2 points
Conforms to the topic outlined above in bold text:	8 points
Quality, novelty, and accuracy of information presented:	8 points
Use of the peer-reviewed literature:	3 points
Adequately puts the proposed research in the context of previous work:	2 points
Grammar, syntax and spelling:	2 points
Peer review:	1 points
Total:	**30 points**

Definitive List of Coastal Natural Communities for the purposes of this course. Communities on the same row are synonymous between Georgia and Florida classifications. The date and location where you will present on each habitat type is listed, although we may see the same habitat type at several locations. I will model the first one. An example of the handout you will prepare is included after this list.

Georgia (see 16th page of Edwards et al. 2012 pdf)	**Florida**	**Where will you present on it?**	**Date of Presentation**	**Group members to sign up**
Salt and Brackish Marshes	Salt marsh	Sapelo Island trip	May 17	**Dr. Reece**
Intertidal Beaches, Sand Bars	Coastal berm	Sapelo Island	May 18	Grace & Kara
Maritime Dunes	Beach Dune; Coastal Grassland			
	Pine Rockland, Rockland Hammock	Everglades	May 27	Tressa
Tidal Swamps	Strand Swamp	Everglades National Park	May 27	Matt & Coral
	Slough			
	Glades Marsh			
Coastal Estuarine and Near-shore Marine Waters	Coral Reefs	Key Largo	May 28	Nicole & Kennedy
	Seagrass	Key Largo	May 29	Josh & D'amonte'
	Mangroves	Key Largo	May 29	Ariana & David
	Coralline Algae Shoal	Key Largo	May 30	NA
Maritime Forests	Maritime Hammock	St. Augustine	May 24	Taylor