GEO 2230: Living with Rising Seas
Quest 2, UF Gulf Scholars Course

I. General Information

Class Meetings

- Fall 2025
- **Meeting Day/Time:** Tuesdays period 5-6/Thursdays period 6
- **Location:** T - Carleton Auditorium (CAR) 0100; R- Little Hall (LIT) 113

Instructor

- Dr. Katy Serafin, Assistant Professor
- **Office Location:** 3140 Turlington Hall
- **Office Hours:** Wednesday 12:30 – 1:30 pm; Thursdays 2 – 3 pm
- **Email:** kserafin@ufl.edu, **Office Phone:** 352-294-9052

Teaching Assistant

- Ms. Airin Atker, PhD Student
- Email: akter.a@ufl.edu

Course Description

Coastlines, home to much of the world's population, economy, and important ecosystems, are changing in critical ways due to rising seas. This course examines the complex relationship between humans and coastlines by asking the pressing question, "How will humanity adapt to sea level rise?" Students will connect the science of sea level rise and coastal change to impacts on infrastructure, ecosystems, and society. Students will explore multiple facets of sea level rise through place-based learning, investigating cross-disciplinary topics such as the physical drivers and consequences of sea level rise, mitigation techniques, and adaptation, using examples from states across the Gulf of America. Students will consider the transformative shifts that will be necessary in current decision-making to develop resilient and sustainable coastal futures. Students will explore these themes through in-class discussions and activities, experiential learning, and reflections on their and others' relationship with the coast.

Quest and General Education Credit

- Quest 2
- Physical Sciences (P)

This course accomplishes the Quest and General Education objectives of the subject areas listed above. A minimum grade of C is required for Quest and General Education credit. Courses intended to satisfy Quest and General Education requirements cannot be taken S-U.

Required Readings and Works

Materials and Supplies Fees: n/a

Required Technology: This course will be held in-person. Students must provide their own computer to work on assignments in and/or outside of class.

Required:
Rush, Elizabeth, 2019, *Rising: Dispatches from the New American Shore*, Edition 1, Milkweed Editions, Minneapolis, Minnesota. [*An electronic copy is available through the library/Course Reserves.]*

All other readings will be provided in class or as .pdf format on Canvas.

Recommended:
Hine et al., 2016, Sea Level Rise in Florida: Science, Impacts, and Policy. University of Florida Press. **There are some optional readings from this book, but you are not required to do them or purchase. A great supplemental read if you are interested in sea level rise specific to Florida!**

Instructional materials for this course consist of only those materials specifically reviewed, selected, and assigned by the instructor(s). The instructor(s) is only responsible for these instructional materials.

II. Graded Work

Description of Graded Work

Assignment	Description	Requirements	Points (Percent)
Learning Check-Point Quizzes	Most weeks, students will complete a short quiz on Canvas that will test their understanding of the readings and lecture material (10 points each).	11 weekly quizzes, lowest score dropped Due by 11:59pm on Friday	100 (10%)
Small group discussions	Four times during the semester, students will participate in small-group discussions (5-7 students per group) focused on course readings.		

	Each student is assigned a role during each discussion and is responsible for contributing to the group's 1 page output. Preparation includes reading assigned materials and coming ready to support your role with evidence from readings or lectures. Grading is based on active engagement, preparation, contribution to group output, and use of evidence. (50 points per week)	Submit your notes and group output in class after the discussion	200 (20%)
In-class Activities	During 5 weeks of the semester, students will have in-class activities. Depending on the activity, students will work individually or in a group. Each activity will have a component that you have to be present to receive credit for. Activities will introduce hands-on learning concepts and focus on Gulf of America communities (40 points each).	5 weekly in-class activities, lowest score dropped	160 (16%)
Guided Reflections	During the semester, students will reflect on their own experiences and uses of the coastline. Students will also read excerpts from the book "Rising: Dispatches from the New American Shore" to reflect on others' personal narratives about sea level rise impacts on their homes and families. Students will write two reflections during the term following prompts from the instructor (50 pts). Reflections should have a word length of approximately 200-300.	2 total Due dates on Canvas	100 (10%)
Midterm Exam	During week 8, students will have a short answer, open book midterm focused on the first half of the semester (weeks 1-7). Students will be allowed one piece of paper with notes on it, front and back. It may be typed.	Short-answer, open book	100 (10%)
Final Project	Students will connect the science of sea level rise and coastal change to impacts on infrastructure, ecosystems, and society. Students will work in groups to develop an integrated sea		340 (34%)

	level rise adaptation plan for a Gulf Coast community using an ArcGIS StoryMap, a web-based application to creative interactive narratives. At the beginning of the semester, students will select a city in a state located along the Gulf of America coast which will also designate their group. Each group will select three distinct topics (e.g., transportation infrastructure, private homes, ecosystems/recreational areas, etc.) and assess their vulnerability under projected 2100 sea level scenarios. Groups will design adaptation strategies that consider interactions among topics, adaptability to other sea level rise scenarios/sustainability, and impacts on civic life. The project will be submitted in stages, including city/topic selection, inundation maps, StoryMap draft for peer review, and final StoryMap. Each stage will be graded to support progress.	1) City choice: (10 pt; 1%) 2) Topic choices: (10 pt, 1%) 3) Sea level rise inundation map and topic analysis (100 pts; 10%) 4) StoryMap Draft Peer Feedback (70 pts; 7%) 5) Final Project StoryMap (150 pts; 15%)	
Total			1000 pts

Grading Scale

For information on how UF assigns grade points, visit: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

A	94.5 – 100% of possible points		C	73.5 – 76.5%
A-	89.5 – 94.5%		C-	69.5 – 73.5%
B+	86.5 – 89.5%		D+	66.5 – 69.5%
B	83.5 – 86.5%		D	63.5 – 66.5%
B-	79.5 – 83.5%		D-	59.5 – 63.5%
C+	76.5 – 79.5%		E	<59.5

At the end of the semester, I will round your grade to the tenths. There will be no additional rounding. So, for example, if you receive a 94.4, that is an A- rather than an A.

Participation: Participation and attendance are critical to the successful completion of this course. Consistent informed, thoughtful, and considerate class participation is expected.

Note: If you have personal issues that prohibit you from joining freely in class discussion, e.g., shyness, language barriers, etc., see the instructor as soon as possible to discuss alternative modes of participation.

Grade Disputes: Should a student wish to dispute any grade received in this class (other than simple addition errors), the dispute must be in writing and be submitted to the instructor within a week of receiving the grade. The dispute should set out very clearly, the grade that the student believes the assignment should have received as well as why they believe that they should have received such a grade.

Policy on Late and Make-up Work: Work that is handed in late will receive an automatic 10% deduction. If you foresee an issue with a deadline, clemency may be granted for late work if you speak with me EARLY before submission with valid excuse. Please communicate to me any problems with assignments submissions or discussions. Please document your problems as best possible (doctor's or ER slip, obituary, etc.). **No late work will be accepted after the Friday of the last full week of classes, November 21st. The late policy DOES NOT apply to the following assignments:** Reflection #3, Final Project Part 4, and Final Project Part 5.

III. Annotated Weekly Schedule

Students should note that .pdf syllabus is a guideline and that there may be changes to the class schedule as well as the readings. Please refer to our Canvas page for the official readings, assignments, and due dates.

Week	Topics, Homework, and Assignments
Week 1	• **Topic:** Introduction to the course • **Summary:** We will discuss the content and structure of the class during the term. • **Readings/Works**: 1. How to Read a Scientific Article, Adapted from Drs. Purugganan and Hewitt; Cain Project in Engineering and Professional Communication 2. Please read the whole syllabus • **Activity/Discussion:** None **Assignments:** Enjoy the first week of classes!
Week 2	• **Topic:** Introduction to coastal environments • **Question:** What is a beach? Why do some coastlines have plants? • **Summary:** We will discuss coastal environments such as sandy beaches and coastal wetlands and their delicate balance with tidal level. • **Readings/Works:** 1. Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. The Password

Week	Topics, Homework, and Assignments
	2. Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. Milkweed Editions. The Marsh at the End of the World. • **Activity:** Ice Breaker • **Assignments:** Reflection #1 due Friday Quiz #1 due Friday
Week 3	• **Topic:** Measuring sea level • **Question:** What is "sea level"? How do we know sea level is rising? • **Summary:** We will explore how we measure sea level using tide gauges and satellite altimetry, and how observations illustrate present-day sea level rise. • **Readings/Works**: 1. Hamlington, B. D., Bellas-Manley, A., Willis, J. K., Fournier, S., Vinogradova, N., Nerem, R. S., ... & Kopp, R. (2024). The rate of global sea level rise doubled during the past three decades Communications Earth & Environment, 5(1), 601. 2. Dusto, A. (2014), Reading between the tides: 200 years of measuring global sea level • **Activity:** In-Class Activity #1: Interpreting maps • **Assignments:** Quiz #2 due Friday In-Class Activity #1 due Friday
Week 4	• **Topic:** Global and regional drivers of sea level change • **Question:** Why is sea level rising? • **Summary:** We will explore the main drivers of global and regional sea level change including thermal expansion, ice sheet and glacier loss, and oceanographic and geological processes. • **Readings/Works:** 1. Kottasova, I. and Doran, T., A drop in the ocean. CNN (approx. 10 pages) 2. Frederikse, T., et al. (2020). The causes of sea-level rise since 1900. *Nature*, 584(7821), 393-397 • **Discussion:** Discussion #1 • **Assignments:** Discussion report #1 due Tuesday Quiz #3 due Friday Final Project Part 1: City Choice due Friday
Week 5	• **Topic:** Impacts on coastal environments • **Question:** How do changing sea levels impact coastal environments? • **Summary:** We will discuss how erosion, flooding, and saltwater intrusion impacts beach and wetland environments. • **Readings/Works:**

Week	Topics, Homework, and Assignments
	1. Rush Kirwan, M. L., Temmerman, S., Skeehan, E. E., Guntenspergen, G. R., & Fagherazzi, S. (2016). Overestimation of marsh vulnerability to sea level rise. Nature Climate Change,6(3), 253-260. 2. Velasquez-Manoff, M., As sea levels rise, so do ghost forests. New York Times. • **Activity:** In-Class Activity #2: Sea level rise rates across the United States • **Assignments:** In-Class Activity #2 due Friday Quiz #4 due Friday
Week 6	• **Topic:** Changing sea level, past and present • **Question:** How has sea level rise changed in the past? How will it change in the future? • **Summary:** We will explore past climate-driven global fluctuations of sea level in the past and how past sea level is inferred through geological and biological proxies. We will discuss future sea level rise projections, including the range of sea level rise due to the uncertainty in mechanisms driving change. • **Readings/Works:** 1. Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. Persimmons, pg 19-41. 2. Clark, P. U., et al. (2016). Consequences of twenty-first-century policy for multi-millennial climate and sea-level change. Nature Climate Change, 6(4), pg 360-369. 3. Grunes, M., (2023). How We Came to Know and Fear the Doomsday Glacier, Haiku Magazine • **Discussion:** Discussion #2 • **Assignments:** Discussion report #2 due Tuesday Final Project Part 2: Topics due Friday Quiz #5 due Friday
Week 7	• **Topic:** Sea level rise impacts to the built environment • **Question:** What is the built environment and how is it affected by sea level rise? • **Summary:** We will explore how humans have inhabited and utilized the coast over time and the consequences of development along a dynamic coastline. We will discuss specific impacts to the built environment and economy, like impacts to roads, businesses, and real estate. • **Readings/Works:** 1. Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. Pulse. 2. Mazzei, P. (2019), 82 Days Underwater: The Tide is High but They're Holding On. The New York Times. 3. Wamsley, L. (2020), Is The Risk Of Sea Level Rise Affecting Florida Home Prices? A New Study Says Yes. NPR. • **Activity:**

Week	Topics, Homework, and Assignments
	In-Class Activity #3: Making maps and exploring future sea level rise scenarios • **Assignments:** Quiz #6 due Friday
Week 8	• **Topic:** Midterm Review + Midterm • **Required Readings/Works:** None • **Assignments:** Midterm on Tuesday NO CLASS THURSDAY 10/9 – use this time to work on final project!
Week 9	• **Topic:** Social Vulnerability and Risk • **Question:** How do we quantify human risks to future sea level rise? • **Summary:** We will explore human vulnerability to sea level rise by evaluating how we measure flood exposure. • **Required Readings/Works:** 1) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. On Vulnerability. 2) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. Risk, pg 137-161 ***TW: mention of sexual assault/harassment pg 142, pg 152 - 154 (in paperback) pg 99, pg 104 - 106 (in e-text)*** 3) Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social vulnerability to environmental hazards. Social Science Quarterly, 84(2), 242-261 • **Assignments:** Final Project Part 3: Map submission due Monday Quiz #7 due Friday
Week 10	• **Topic:** Adaptation and Mitigation: Hard and Soft Solutions • **Questions:** What tools/techniques do we have for responding to sea level rise and coastal change? • **Summary:** We will explore the contemporary terms “accommodate” and “protect” as strategies for combating sea level rise in coastal areas. We will discuss seawalls, beach nourishment, raising infrastructure, and natural solutions. • **Required Readings/Works:** 1) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. On Restoration. 2) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. Looking Backwards and Forwards in Time. 3) Grubba, L., 2020, Beach Nourishment: not just throwing good sand after bad. Adapt. 4) Sack, K. & Schwartz., J. 2018. Left to Louisiana’s Tides, a Village Fights for Time. The New York Times • **Activity:** In Class Activity #4: Adaptation decisions and social vulnerability

Week	Topics, Homework, and Assignments
	• **Assignments:** In-Class Activity #4 due Friday Quiz #8 due Friday
Week 11	• **Topic:** Adaptation and Mitigation: Managed Retreat • **Question:** What tools and techniques do we have for responding to sea level rise and coastal change? • **Summary:** We will explore the contemporary term "retreat" as a strategy for combating sea level rise in coastal areas. We will focus on examples of recent cases of managed retreat such as in Isle de Jean Charles, LA. • **Required Readings/Works:** 1) Bromhead, H., 2022. "Managed Retreat" Is a Terrible Way to Talk About Responding to Climate Change. Slate. 2) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. On Reckoning, ***TW: mentions guns, pg 97 hardcover, pg 73 ebook*** 3) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. On Opportunity, pg 162-165 4) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore. Goodbye Cloud Reflections in the Bay, pg 167-180 • **Discussion:** Discussion # 3 • **Assignments:** Discussion report #3 due Tuesday Quiz #9 due Friday
Week 12	• **Topic:** Decision-making and sea level rise adaptation • **Summary:** We will explore the costs and benefits of different adaptation and mitigation techniques. We will also consider how the "typical" or "traditional" ways to assess risk through cost-benefit analysis often leave out social vulnerability. Students will participate in a roleplay exercise (adapted from the "Sea Level Rise Adaptation Strategy Role Play Game" by Dr. Dawn Jourdan and Briana Ozor) to show the complexities involved with merging science with decisions. • **Required Readings/Works:** 1) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore, On Gratitude 2) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore, Divining Rod 3) Siders, A. R., & Pierce, A. L. (2021). Deciding how to make climate change adaptation decisions. Current Opinion in Environmental Sustainability, 52, 1-8. • **Activity** In Class Activity #5: Role Play • **Assignments:** Final Project Part 4: StoryMap Draft Due Quiz #10 due Friday
Week 13	• **Topic:** Policies, Plans, and Adaptation in Practice

Week	Topics, Homework, and Assignments
	• **Summary:** We will explore current Florida policies important for SLR adaptation planning including examples of recent flood resilience state legislature. • **Required Readings/Works:** 1) Flavelle,C., 2020. A climate plan in Texas focuses on minorities. Not everyone likes it. The New York Times 2) Rush, Elizabeth, 2019, Rising: Dispatches from the New American Shore, Afterward, pg 253-264. • **Assignments:** Quiz #11 due Friday Final Project Part 4: Peer Reviews NO CLASS TUESDAY 11/11 – VETERAN'S DAY
Week 14	• **Topic:** Policies, Plans, and Adaptation in Practice • **Summary:** We will discuss examples of adaption plans such as Miami-Dade County's Sea Level Rise Strategy and Resilient Cedar Key. • **Discussion:** Discussion #4 • **Assignments:** Discussion report #4 due Tuesday
Week 15	• **Topic:** Final reflections and questions • **Summary:** We will recap the course and discuss open questions in the field of sea level rise, coastal science, adaptation, and resilience. ***No Class on Thursday, reading day!*** • **Assignments:** Reflection #2 due Monday
Finals Week	Final Project Part 5 due

IV. Student Learning Outcomes (SLOs)

At the end of this course, students will be expected to have achieved the Quest and General Education and UF Gulf Scholars Program learning outcomes as follows:

Content*: Students demonstrate competence in the terminology, concepts, theories and methodologies used within the discipline(s)*.

- Identify, describe, and explain how sea level rise is observed in present-day and past records, the processes that drive long-term sea level change, and regional projections of sea level change (**P**). **Assessments:** Learning Check Point Quizzes, In-Class Activities, Midterm Exam, Class Discussions and Participation
- Compare and contrast how sea level rise impacts a variety of landscapes, and the techniques humans use to mitigate these changes along developed coastlines (**P, Quest 2**). **Assessments:**

Learning Check Point Quizzes, In-Class Activities, Midterm Exam, Class Discussions and Participation

Critical Thinking: *Students carefully and logically analyze information from multiple perspectives and develop reasoned solutions to problems within the discipline(s).*

- Evaluate and apply science-based principles needed to inform management and policy outcomes designed to manage, adapt, or mitigate impacts from sea level rise **(P, Quest 2). Assessments:** In-Class Role Play, In-Class Activities, Midterm Exam, Final Project, Class Discussions and Participation

Communication: *Students communicate knowledge, ideas and reasoning clearly and effectively in written and oral forms appropriate to the discipline(s).*

- Develop a research project related to how sea level rise will impact a topic of interest (**P, Quest 2**). **Assessments:** Class Discussions and Participation, Final Project
- Present technical, scientific papers distilled to key points and main message **(P, Quest 2). Assessments:** Class Discussions and Participation, Final Project
- Examine the quality of civic life, equity, and sustainability in Gulf communities through interdisciplinary and integrative learning **(UF Gulf Scholars Program). Assessments:** In-Class Activities, Discussions, and Final project

Connection: *Students connect course content with meaningful critical reflection on their intellectual, personal, and professional development at UF and beyond.*

- Reflect on how they utilize the coastline, how sea level rise may alter those uses, and how their perspective compares to others with different cultural backgrounds (**Quest 2**). **Assessments**: Guided Reflections

V. Quest Learning Experiences

1. Details of Experiential Learning Component

During the term, students will read excerpts from the text *Rising: Dispatches from the New American Shore* that are complementary to weekly course material. This text provides narratives of coastal change through a diverse set of perspectives. In class, students will use a variety of real data sets for quantitative analysis of physical processes and consider real adaptation plans for communities within Florida and across the United States.

2. Details of Self-Reflection Component

Over the course, students will reflect on their perceptions of sea level rise and how it impacts their daily lives, as well as the lives of others around them. Through guided prompts, students are encouraged to think about their relationship with the coastline and how sea level rise may alter that relationship. The experiential learning components, such as reading the text *Rising: Dispatches from the New American Shore* will engage students in viewing ties to the coastlines across different cultures and socio-economic backgrounds in ways that may be different than their own.

VI. UF Gulf Scholars Program

Communities along the Gulf are facing complex environmental, health, and social challenges – all of which are exacerbated by climate change. These challenges will take leaders from many disciplines and diverse lived experiences to solve. **UF Gulf Scholars is an exciting new opportunity to earn your degree while doing meaningful work to promote stewardship, resiliency, and innovation in communities around the Gulf.** Gulf Scholars will have the chance to take Gulf-focused coursework; participate in internships, research projects, field excursions, and more; network with professionals and peers from many academic backgrounds; and work with faculty mentors and community partners on Gulf Impact Projects.

Enrollment in the UF Gulf Scholars Medallion program is now open, and **students from all majors are encouraged to sign up.** Please visit the website for more information: https://gulfscholars.bobgrahamcenter.ufl.edu/uf-gulf-scholars-medallion/

VII. Required Policies

This course complies with all UF academic policies. For information on those polices and for resources for students, please see this link.

Students Requiring Accommodation

It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Please see the link at the beginning of this section for more information.

University Honesty Policy

Violations of the Honor Code such as plagiarism will not be tolerated. Acts of plagiarism will receive a 0 on the assignment as well as disciplinary action for academic integrity.

Please see the link at the beginning of this section for more information.

Policy on ChatGPT and use of AI-generated text/writing bots

While AI tools like Chat GPT can be efficient, students should be critical of it as in any other source of information. It may interpret technical information poorly, may get facts wrong, and does not appropriately credit sources. Be very careful in its application and credit and paraphrase it as you would any other sources. Good writing integrates multiple sources and aims for engaging readers with the content which AI-generated text can fail to do. Direct copy-paste of AI-generated text or minimal revision of artificially generated text is a form of plagiarism, as would be from any other text or document, so if you choose to use, please always thoroughly revise, edit, fact-check, and improve any

writing generated with AI tools. It is also fine not to use it at all. ***In this course, AI-generated text is not allowed to be used in your reflections, discussion prompts or in the final writeup.***