Syllabus for GEOS212: Introduction to Oceanography, Spring 2020 (in-class section)

(Subject to minor revision)

Spring Semester	Tuesday and Thursday, 11:00 AM to 12:15 PM in ENRB2-N120
Professor	George Gehrels Department of Geosciences Gould-Simpson 529 Office Hours: Tuesday/Thursday 12:30-1:30 PM
Instructor/Lecture Assistant	Paul Goodman Department of Geosciences Gould-Simpson 305 Office Hours: Tuesday 1:00-1:55pm, Wednesday 11:00-11:55am
Teaching Assistants	Robert Hayes: Office Hours Tuesdays 9:00-10:00 AM in GS 307. Tumaini Kamulai: Office Hours Wednesdays 10:00-11:00 AM in GS 330. Brandon Levenstein: Office Hours Thursdays 10:00-11:00 AM in GS 511.

MAIN CONTACT FOR COURSE = **ua.oceanography@gmail.com**

COURSE DESCRIPTION

This course provides an introduction to our amazing Oceans: their distribution/shape/depth today and in the past, the water and what's in it, how the water moves, how the oceans influence global climate, how life in the ocean has evolved, and some of the different marine communities that exist today.

EXPECTED LEARNING OUTCOMES

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

- Understand the natural cycles of water and sediment on Earth
- Articulate the central role of the ocean in controlling our climate
- Explain the forces that cause the water in the ocean to be in ceaseless motion
- Characterize common features and organizing principles of marine communities
- Discuss the impacts of human activities on the ocean
- Gather and assess information from maps, diagrams, photographs, videos, and (simple) equations!

GOALS

Our main goals for this class are to:

- enhance your appreciation for the significance and beauty of the oceans
- inform you about how the ocean affects your daily life
- help you do well in this course
- facilitate your success as a student at the University of Arizona

ABSENCES AND CLASS PARTICIPATION POLICY

- The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop.
- The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, http://policy.arizona.edu/human-resources/religious-accommodation-policy.

- Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: https://deanofstudents.arizona.edu/absences.

REQUIRED MAP

World Map: There is **no textbook** for this class, but you need to purchase a copy of the **Physical Map of the World**, which is available from the UA bookstore (for $16.99). These maps will not be collected at the end of the semester.

REQUIRED CLICKER DEVICE

Clickers are interactive student response systems that allow you to participate in class discussions, register attendance during lecture, and demonstrate knowledge of new material. We will have several questions during each lecture that you will be able to respond to (and earn points) with your device. Stay tuned for specific information about which clickers will work and how to register them.

D2L

- **All information** for this course is available on D2L (http://d2l.arizona.edu). Most material will be posted on the "Course Home", "Announcement", and "Content" pages.
- We provide: lecture outlines, lecture slides, review sheets, sample exams, etc. -- there is no need for you to acquire additional study materials (e.g., Notehall, ShareNotes, etc.).

LECTURE OUTLINES, SLIDES, PODCASTS

- A lecture outline that includes the main points and diagrams from the lecture will be posted on the class web site (at D2L) prior to each lecture. Bring a copy to class to take notes on.
- Lecture slides are posted to D2L before each lecture.
- A podcast of each lecture will be posted on D2L after each lecture. The recording will include audio from the lecture as well as any material displayed on the screen (PPT, movies, overhead, etc.)

CLASSROOM POLICIES (Creating a productive learning environment)

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where everyone feels comfortable and is able to succeed.

A) Attendance: Attendance is strongly suggested! You are encouraged to come to every class and take careful notes. There is no book for the course, and exams focus on material presented in lecture. There also will be several in-class extra-credit opportunities, during the semester.

B) Note-taking: We strongly encourage you to take notes during lecture, as this will help you learn the material.

C) Clickers: We will pose several questions during each lecture. Points will be awarded for any answer, and additional points will be awarded for the correct answer! These points will add up to a significant part of your grade!

D) Computers (Laptops/iPads): As long as you are not disrupting the learning environment, the use of laptop computers or iPads/tablets is permitted during class for taking notes or class-related activities.

E) Cell phones: The use of cell phones for voice or text communication during class is a distraction to the learning environment and is therefore **prohibited**. If you have to make or receive a call/text during class, please step into the hallway and return when you are done.

STUDY GROUPS

- Study Group Sessions are provided to help you learn the material covered on homework assignments and exams, and provide opportunities to work with others and receive help from TA's/Preceptors. And they are a lot fun!!
- Study groups are held hourly on Tuesdays afternoons, Wednesdays during prime-time, and on Thursday mornings. Check the Study Group Schedule on D2L for specific times.

- Each session starts on the hour and lasts for about ~50 minutes.
- **Sign up** for a Study Group Session if you plan on attending that session regularly. Signups will be available from the course web page at D2L under "Groups".
- **Study Groups are optional**, so you need not attend every week even if you have signed up. And you are also free to attend without signing up, so long as there is space in the classroom.
- **All study groups are held in Gould-Simpson 228A** (along south corridor, toward the west end). Ramp access is available if you contact us ahead of time at ua.oceanography@gmail.com.

GRADED WORK

- Grades will be available through D2L.
- All grades will be entered into D2L within one week of the due date.
- Graded papers will be returned to you in the Oceanography alphabetical return boxes (at east end of Gould-Simpson building) within one week of being submitted.
- Please note the due date for each assignment: we encourage you to get your assignments in as early as possible**.**

NO LATE ASSIGNMENTS WILL BE ACCEPTED FOR *ANY* REASON. This is because answer keys are posted and graded papers are returned soon after the due date. Points for missed assignments can be made up with extra credit.

It is YOUR responsibility to address grading concerns within a short time after work has been returned. Check the Lecture Schedule for the final dates for regarding for Part 1, Part 2, and Part 3 material. University policy regarding grades and grading systems is available at http://catalog.arizona.edu/policy/grades-and-grading-system

EXAMS (300 points)

- Three 100-point exams will be given during the semester, and there will **not** be a cumulative final exam during final exam week. You can take each exam either on Tuesday evening, Wednesday evening, or in class on Thursday. You can only take each exam one time.
- **You will need your Cat Card with you for each exam.**
- Each exam covers only material since the previous exam.
- Slides, diagrams, and videos shown in class commonly are used during exams! Format will consist of about 50% written answers or drawing diagrams, and about 50% multiple-choice questions that are keyed to diagrams or real-world pictures.
- To help you prepare, a brief study guide and an exam from a previous semester will be available on D2L. We will also have a review session on Tuesday and Wednesday evenings prior to each of the evening exam opportunities – see your Lecture Schedule for dates/times/locations. During these review sessions, we will go over the practice exam, review some of the main diagrams that you might be asked about, and answer any questions you may have.
- ****IMPORTANT** If you will miss an exam for a legitimate reason, you can take the make-up exam as shown on the lecture schedule. No other make-up exams are available.** We encourage you to take the exam during one of the regular opportunities -- the make-up exam is only for excused absences.

HOMEWORK (80 points)

- **Eight** homework assignments during the semester. We do not drop a homework.
- Please turn in paper copies (not electronic copies) of the homework assignments.
- Assignments emphasize material that will be covered on the exams.
- Each will be worth **10 points**.

- Most of the exercises are based on information gathered from lecture, your world maps and accompanying diagrams.
- You will have one week to complete each homework assignment.
- Make sure you turn in your own work. Do not turn in work that has the same content or format as anyone else's!
- **All homework must be turned in by Friday at 12 noon**. See Lecture Schedule for details.

There are two ways to submit your homework assignments:

- Homework done in a study session should be turned in at the end of the session.
- Homework done on your own (not in a study group session) should be turned in to the "GEOS212 Homework" box in the lobby of the Gould-Simpson building (see photo above). The Gould-Simpson building is generally unlocked from about 7:00 AM to 7:00 PM each weekday.

CLICKER QUESTIONS (120 points)

- You will be able to respond to two questions during each of our 25 lectures. One point per question will be earned for any answer, and two additional points will be awarded for choosing the correct answer! We will drop 30 of the available 150 points (5 lectures) to accommodate lectures that you are unable to attend.

CLASS PROJECT (30 points)

- You will have an opportunity to work on a project this semester that focuses on improving the sustainability of seafood, which is one of the most important issues regarding the health of our oceans.
- The project will have three components:
    - The first activity will be for you to learn about issues of seafood sustainability -- what the main issues are, what can be done to address them, and why they are important. You will find lots of information about the topic on various web pages.
    - The second phase will be for us (as a class) to design a small card that describes the issues and presents lists of "good" and "bad" seafood (perhaps ten of each). Focus on seafood that is relevant for Arizona residents. We will have 4000 of these card printed.
    - The final phase will be for each student to distribute 10 cards to other people (not class members), and describe why the issues are important.
- The writing activities associated with the project fulfill a large part of the University of Arizona General Education writing requirement (http://gened.arizona.edu/content/writing-component).

The class project has five components:

A) Prepare Project Proposal -- Due on Feb 11 at 5:00 PM (10 points)

- Prepare a one-page document that has the following components:
    - **Title of Project** (your choice) followed by your name
    - Section that describes the **Importance of Seafood Sustainability** (a few sentences that describe why improving seafood sustainability is important)
    - Section that describes the **Critical Factors of Seafood Sustainability.** This should include short descriptions of 3-5 critical factors that impact seafood sustainability (e.g., bycatch).
    - Bulleted list of ten types of seafood that would be considered **Good Seafood.**
    - Bulleted list of ten types of seafood that would be considered **Bad Seafood.** Each should be followed by the main issue(s). For example: **Tuna** *(dolphins caught as bycatch)*
    - List of the sources of your sources of information (URLs of web pages; title, author, year, and journal/publisher for articles/books). Make sure that you do not use text word-for-word from any source!
- Your document should be formatted with single space, 12 point font, and 1 inch margins, and use correct spelling and grammar.

- Proposals must be submitted in paper, and turned in to the GEOS212 Homework Box.

B) Project Proposal Returned: Proposal will be returned to you with feedback (e.g., suggestions for improvement) on February 14. Papers will be in the Homework return box (east end of Gould-Simpson Building).

C) Class discussion of main issues, selection of seafood items for Good and Bad lists, and design of cards for distribution. This will happen on Feb 18, cards will be printed and available on Feb 25.

D) Share cards with ten people (friends, family members, etc., but not class members). Tell each person a little bit about importance of seafood sustainability, the main issues facing marine organisms, and how someone might use our Good and Bad lists.

E) Project Final Report -- Due on April 21 at 5:00 PM (20 points)

- **Title of Project** (your choice) followed by your name
- **Description of Ten Interactions** that you have had regarding seafood sustainability. Write a few sentences about each one.
- **Reflections** on three aspects of the project:
    - what you learned about seafood sustainability
    - whether or not the project was successful in addressing the important issues
    - how this project may impact your interest in becoming involved in societal issues
- Your document should be formatted with single space, 12 point font, and 1 inch margins, and use correct spelling and grammar.
- Reports must be submitted in paper, and turned in to the GEOS212 Homework Box.

EXTRA CREDIT (up to 20 points)

There will be several opportunities to earn extra credit during the semester, as described below. **You will be allowed to earn up to 20 total extra credit points**, where each extra credit point counts the same as an exam or a homework point. Opportunities include:

- **Take good notes during lecture (10 points max).** Your name will be posted at the end of lecture twice during the semester. Each time your name appears, show us your notes at the end of class and you will receive five points of extra credit.
- **Help us get to know you** (5 points): We will try hard to get to know you this semester. Help make this happen by giving us a mug shot and telling us a bit about your background and interests -- use the "Get-To-Know-You" form on D2L. Please submit the form with a photo that shows your face (no photo, no credit) before 5:00 PM on January 28 (turn in to GEOS212 Homework Box).
- **Volunteer at the Tucson Gem and Mineral Show on Feb 16-17**. You will need to work a two-hour shift at the Junior Education table at the Tucson Gem and Mineral Show. Stay tuned for more info.
- **Come to Class and participate!!** Occasionally we will ask for volunteers to answer a question, describe a process, or help with a demonstration in class.
- **In-Class Presentations** (up to 10 points, only one): This is an opportunity to earn extra credit points by presenting non-traditional oceanographic information to the class. Your presentation could be (1) a slide show in which you describe the oceanography or geology of some place that you have visited or lived, (2) a song (performed live!) with oceanographically oriented lyrics, (3) a multimedia depiction of a marine process, (4) a diagram that you have developed which describes a marine feature or process, etc. *Almost* anything goes!! **Note that we need to approve your idea beforehand, your presentation must be scheduled at least one week in advance, and we will do only one presentation per class period, so**

spots are limited. You may work with up to one other person on your presentation, but no more than 2 people can get credit for any presentation. Please schedule your presentation with George or Paul.

GRADING

530 points are possible from exams (300 points), homeworks (80 points), project (30 points), and clicker questions (120 points). You can earn up to 20 points from extra credit.

Grades are straight A, B, C, D, E calculated by percent out of 530 points:

A = ≥89.5% = ≥ 475 points
B = 79.5% to 89.5% = 422-474 points
C = 69.5% to 79.5% = 369-421 points
D = 59.5% to 69.5% = 316-368 points
E = <59.5% = ≤ 315 points

Note that you can easily calculate your current grade during the semester just by adding up the points you have earned and dividing by the points possible for the completed work.

Every point counts! We will NOT adjust your grade at the end of the semester even if you miss the cutoff for the next letter grade by only 1 point, so please don't ask!

HONORS STUDENTS

Honors students can earn Honors credit in this course by signing up for Section 2 of Geos 212. You will earn honors credit by serving as a preceptor in the course, which involves attending a once-a-week meeting on Fridays (1:00-2:00 in GS 228A), and hosting a one-hour-per-week study group (see above description of study group activities). Please contact George or Paul if you are interested in switching into the Honor's section of this course.

INCLUSIVENESS

- Inclusive Excellence is a fundamental part of the University of Arizona's strategic plan and culture. As part of this initiative, UA embraces both the principles and the practices of diversity and inclusiveness. These values are expected, respected, and welcomed in this course.
- This course supports elective gender pronoun use and self-identification; rosters indicating such choices will be updated throughout the semester, upon student request. As the course includes group work and in-class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect.

ACCESSIBILITY AND ACCOMMODATIONS

- Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let us know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268, http://drc.arizona.edu/) to establish reasonable accommodations.
- If you have reasonable accommodations, please plan to meet with George or Paul by appointment or during office hours to discuss accommodations and how course requirements and activities may impact your ability to fully participate.
- Please note that we provide lecture notes for DRC students who have accommodation for note-taking. These will be posted on D2L (under Groups) before each lecture.
- Please be aware that the accessible table and chairs in our classroom should remain available for students who find that standard classroom seating is not usable.
- **If at any time you are not doing as well in the class as you would like to be, please seek assistance!**

ADDITIONAL RESOURCES FOR STUDENTS

- UA Academic policies and procedures are available at: http://catalog.arizona.edu/policies.
- Student Assistance and Advocacy information is available at: http://deanofstudents.arizona.edu/student-assistance/students/student-assistance
- Office of Diversity (http://diversity.arizona.edu/)
- Campus Health Counseling and Psych Services: http://www.health.arizona.edu/counseling-and-psych-services
- Campus Health OASIS Sexual Assault and Trauma Services: http://www.health.arizona.edu/oasis-sexual-assault-and-trauma-services

CODE OF ACADEMIC INTEGRITY

Policies of the University of Arizona

See http://deanofstudents.arizona.edu/codeofacademicintegrity for the complete policy.

- Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog.
- The University Libraries have some excellent tips for avoiding plagiarism, available at http://new.library.arizona.edu/research/citing/plagiarism.
- Violations of the UA Code of Academic Integrity are serious offenses at the University of Arizona. As your instructors, George and Paul will deal with alleged violations in a fair and honest manner. As students, you are expected to do your own work and follow class rules on all tests and assignments. Alleged violations of the UA Code of Academic Integrity will be reported to the Dean of Students Office and may result in sanction(s) (i.e., loss of credit on assignment, failure in class, suspension, etc.)

Most issues with academic integrity in this course arise from Homework assignments. Here's a simple guide:

Do This ➔ Feel free to work with other students, use information from other sources, and/or receive assistance from your Instructor/TA/preceptor. Just make sure that what you write/draw is your own work.

-- If you complete your homework during a Study Group Session, turn your paper in to your TA/preceptor at the end of the session.

-- If you do your homework exercise on your own (not in a study group session), turn your paper in to the box labeled "GEOS 212 HOMEWORK" at the east end of Gould-Simpson. You can turn your paper in anytime until Friday noon during the week that it is due!

Do not do this ➔ Do not turn in a paper that resembles work turned in by any other student. Everything that you turn in must be in your own words or drawing. Identical papers will receive zero points the first time, and will be submitted to the Dean of Students the second time.

DISRUPTIVE BEHAVIOR

UA Policy on Disruptive Behavior In An Instructional Setting:

See http://deanofstudents.arizona.edu/accountability/disruptive-student-behavior and http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting for the complete policy.

- **Disruptive Behavior is Prohibited**: "Disruptive behavior" means conduct that materially and substantially interferes with or obstructs the teaching or learning process in the context of a classroom or educational setting. Disruptive behavior includes conduct that distracts or intimidates others in a manner that interferes with instructional activities, fails to adhere to an instructor's appropriate classroom rules or instructions, or interferes with the normal operations of the University.

- Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

THREATENING BEHAVIOR

UA Policy on Threatening Behavior By Students:

See http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students for the complete policy.

- **Threatening Behavior is Prohibited:** "Threatening behavior" means any statement, communication, conduct or gesture, including those in written form, directed toward any member of the University community that causes a reasonable apprehension of physical harm to a person or property. A student can be guilty of threatening behavior even if the person who is the object of the threat does not observe or receive it, so long as a reasonable person would interpret the maker's statement, communication, conduct or gesture as a serious expression of intent to physically harm.
- The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself.

NONDISCRIMINATION AND ANTI-HARASSMENT POLICY

UA Policy on Nondiscrimination and Anti-harassment

See http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy for the complete policy.

- The University is committed to creating and maintaining an environment **free of discrimination**.
- Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

CONFIDENTIALITY OF STUDENT RECORDS

http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa

SUBJECT TO CHANGE STATEMENT

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.

Schedule for In-Class Section of Geos 212 (Spring 2020)			
Lecture #	**Date**	**Subject**	**HW in/out**
1	1/16	**Intro to Oceanography**	
2	1/21	**Ocean Basins & Spreading Centers**	
3	1/23	**Hot Spots & Subduction zones**	
	1/24		**HW1 out**
4	1/28	**Volcanoes**	Get-to-know-you due
5	1/30	**Transform faults & Earthquakes**	
	1/31		**HW1 due** **HW2 out**
6	2/4	**Ocean History & Mountains**	
7	2/6	**Rivers, Wind, & Glaciers**	
	2/7		**HW2 due** **HW3 out**
8	2/11	**Sediments on the Sea Floor**	Project Plan due
9	2/13	**Sea Water Chemistry**	
	2/14		**HW3 due**
	2/14-17	*TGMS (Fri-Sat-Sun)*	
10	2/18	**Sunlight/Color/Temperature**	Project Plan returned
	2/18	*Review Session 6:30-8:00 PM (PAS201)* *Optional Exam 8:00-9:30 PM (PAS201)*	
	2/19	*Review Session 6:30-8:00 PM (SocSci100)* *Optional Exam 8:00-9:30 PM (SocSci100)*	
	2/20	*EXAM #1*	
	2/21	*Hybrid Section EXAM option 12:30-1:45 PM (SocSci100)*	
11	2/25	**Atmosphere**	
12	2/27	**Climate & Global Warming**	
	2/28	*Exam 1 makeup (GS228A @ 2:00)*	**HW4 out**

13	3/3	**Weather** *Last call for Part 1 grading issues (5:00 PM)*	
14	3/5	**Wind & Waves**	
	3/6		**HW4 due** **HW5 out**
	3/10	*Spring Break -- no class*	
	3/12	*Spring Break -- no class*	
15	3/17	**Waves & Surfing**	
16	3/19	**Coastal Currents**	
	3/20		**HW5 due** **HW6 out**
17	3/24	**Density Currents & Upwelling**	
18	3/26	**Tsunami**	
	3/27		**HW6 due**
19	3/31	**El Nino & Hurricanes**	
	3/31	*Review Session 6:30-8:00 PM (PAS201)* *Optional Exam 8:00-9:30 PM (PAS201)*	
	4/1	*Review Session 6:30-8:00 PM (SocSci100)* *Optional Exam 8:00-9:30 PM (SocSci100)*	
	4/2	*EXAM #2*	
	4/3	*Hybrid Section EXAM option 12:30-1:45 PM (SocSci100)*	
20	4/7	**Intro to Marine Life**	
21	4/9	**Evolution & Food Webs**	
	4/10	*Exam 2 makeup (GS 228A @ 2:00)*	**HW7 out**
22	4/14	**Kelp & Mangroves** *Last call for part 2 grading issues (5:00 PM)*	
23	4/16	**Coral & Plankton Communities**	
	4/17		**HW7 due** **HW8 out**
24	4/21	**Open Ocean Community**	Project Report due
25	4/23	**Whales & Dolphins**	
	4/24		**HW8 due**

26	4/28	**Deep Sea & Hydrothermal Vents**	
	4/28	*Review Session 6:30-8:00 PM (PAS201)* *Optional Exam 8:00-9:30 PM (PAS201)*	
	4/29	*Review Session 6:30-8:00 PM (SocSci100)* *Optional Exam 8:00-9:30 PM (SocSci100)*	
	4/30	*EXAM #3*	
	5/1	*Hybrid Section EXAM option 12:30-1:45 PM (SocSci100)*	
	5/5	*Exam 3 makeup (in class)*	
	5/5	*Last call for part 3 grading issues (5:00 PM)*	
	5/12	**No Final Exam!**	