Chaminade University OF HONOLULU

Course Title: **Earth System Science**
Course Number: **ENV450**
Term: **Fall 2021**
Course Credits: **3**
Class Meeting Times: **Tues & Thur 11:30-12:50**
Class Location: **Henry Hall 202 & zoom** (link in Canvas)

Instructor Name: **Dr. Lupita Ruiz-Jones**
You can call me Dr. Lupita or Professor Lupita
Email: **guadalupe.ruiz-jones@chaminade.edu**
Office Location: **Wesselkamper 104**
Cell Phone (welcome to text, lmk who you are): **505.603.1985**
Office Hours: **Tues 10:00-11:30 / Wed 12:30-2:30 / Thur 10:00-11:30 in-person or zoom** (zoom link in Canvas - text me to lmk you want to zoom)

*Images from NASA; figure from Steffen et al. 2020

In-person class: wear your mask and socially distance when possible; no eating or drinking in the classroom.

A couple times we will have zoom class: set yourself up for learning by being in a place you can focus (i.e., not in a car driving or somewhere you will be continuously distracted -- if this is the case, I will ask you to leave class and you will not get credit for the day).

Course description from University catalogue

Earth system science is a new and growing scientific sub-discipline that focuses on the causal connectedness and nature of the interactions between Earth's atmosphere, hydrosphere, lithosphere and biosphere. The course considers the particular

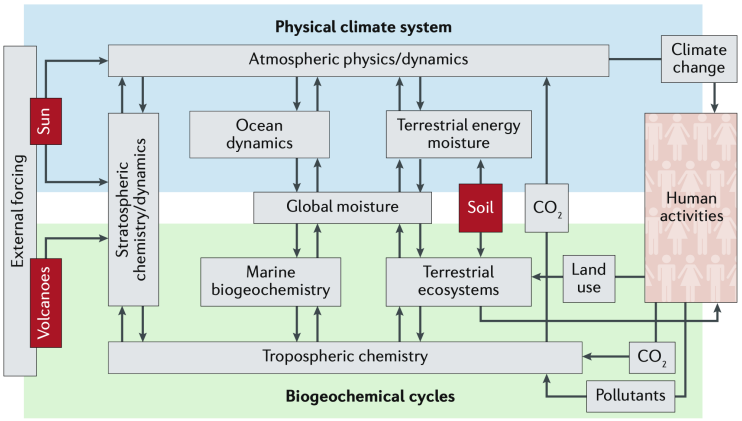

Fig. 2 | **The NASA Bretherton diagram of the Earth System.** The classical, simplified depiction of the Earth System and its interactions. The focus is on the interactions between the geosphere and the biosphere, with human forcings represented as an outside force affecting the geosphere–biosphere system.

interactions within Earth's natural system as well as anthropogenic alterations of it. Finally the course seeks solutions that synergize with or enhance the natural systems.

Course overview

The learning goals of this class are two-fold. First to engage you in learning the foundational concepts of Earth System science by reading chapters in The Blue Planet and supplemental material focused on the geosphere, hydrosphere, atmosphere, biosphere, and anthroposphere. As you acquire this knowledge you will develop and practice skills used in data analysis and critique of scientific concepts presented in different types of sources. You will also think critically about how humans are altering the Earth System and the challenges humanity faces to ensure the wellbeing of all beings everywhere.

Service learning requirement

Through participation in organized or self-directed service learning activities you will discover the many disciplines and techniques involved in ameliorating environmental challenges; and see how we put our skills and our Marianist and Pacific Island values into action for the good of the community.
A place to look for service learning opportunities: http://www.conservationconnections.org/

Classroom etiquette (in the time of the COVID pandemic)

If and when it is deemed safe for us to unite in the same physical classroom, our primary goal will be to keep each other safe. Wear your masks in the classroom. Drink water before coming into the room. No eating or drinking during class. Keep physical space between you, your peers and me. And if you have any COVID symptoms, be responsible and stay home, and let me know your situation.

Alignment of Natural Sciences Courses with Marianist and Hawaiian values

The Natural Sciences Division provides integrative course content taught by experienced, dedicated, and well-educated instructors. *We educate in the family spirit* – every classroom is an *Ohana* (family) and you can expect to be respected yet challenged in an environment that is supportive and inclusive by instructors who take the time to personally get to know and care for you. *We educate for service, justice and peace*, because many of the most pressing global issues (climate change, health inequity, poverty, justice) are those which science and technology investigate, establish ethical parameters for, and offer solutions to. *We educate for adaptation and change*. In science and technology, the only constant is change. Data, techniques, technologies,

questions, interpretations, and ethical landscapes are constantly evolving, and we teach students to thrive on this dynamic uncertainty.

The study of science and technology is formative: exploring human creativity and potential in the development of technologies and scientific solutions; engaging in the stewardship of the natural world; and, promoting social justice. We provide opportunities to engage with the problems that face Hawai'i and the Pacific region through the Natural Sciences curriculum, in particular, those centered around severe challenges in health, poverty, environmental resilience, and erosion of traditional culture. The Marianist Educational Values relate to Native Hawaiian ideas of *mana* (spiritual energy of power and strength), *na'auao* (wisdom, enlightenment), *ohana*, *aloha* (love, affection, generosity, speaking from the heart, patience, and listening) and *aina* (love for the land and its people). We intend for our Natural Sciences programs to be culturally-sustaining, rooted in our Hawaiian place, and centered on core values of *Maiau*, be neat, prepared, careful in all we do; *Makawalu*, demonstrate foresight and planning; *`Ai*, sustain mind and body; *Pa`a Na`au*, learn deeply.

Environmental Science Program Learning Goals

This course is part of the Environmental Science program. These are the Program Learning Outcomes for the program.

Upon completion of the undergraduate B.S. program in Environmental Science, students will be able to:

1. Authenticate their commitment to service, justice and peace through experiential project-based activities that enhance the condition of the integral ecology, care for creation and value all voices.
2. Apply scientific reasoning and methodology to environmental problems.
3. Identify the major physical, chemical and biological components, interactions and cycles of earth systems and ecosystems.
4. Propose, design and participate in scientific research projects that document, describe and/or help solve environmental problems and foster sustainability.
5. Pursue throughout their education new scientific knowledge and techniques that prepare them for the adaptation and change essential to environmental problem solving.

Course Conceptual Learning Outcomes and their evaluation

By the end of the course, you will be able to:

1. Demonstrate ability to describe the major concepts used to characterize the geosphere, hydrosphere, atmosphere, biosphere, and anthroposphere.
    a. Satisfies Program Learning Outcome 3.
    b. Evaluated via quizzes at the end of each of the five modules. These quizzes will cover the assigned chapters in The Blue Planet and assigned primary and secondary articles.
    c. Evaluated via Team-led discussion.
2. Assess the connections between major shifts to the Earth System that have occurred during the Anthropocene and the wellbeing of all beings everywhere.
    a. Evaluated via in-class/online discussions we have focused on the assigned primary and secondary articles and the final popular science project.

Course Skill Learning Outcomes and their evaluation

By the end of the course, you will be able to:

1. Effectively read scientific literature with a critical and analytical mindset and evaluate how science is presented in secondary sources.
    a. Evaluated via in-class/online discussions we have focused on the assigned primary and secondary articles for each module.
2. Facilitate a class discussion on an earth system topic using primary and secondary literature.
    a. Evaluated via Team-led discussion.
3. Communicate clearly and concisely the significance of a central Earth System topic that focuses on Hawai'i to a wide audience.
    a. Satisfies Program Learning Outcome 1 and 5.
    b. Evaluated via your final popular science project.

Team-led discussion

You will work in small teams to develop discussion topics/questions and facilitate a class discussion on an earth system topic and material I have selected. You are welcome to incorporate additional material, but you will need to run it past me before you finalize that. You and your team will be responsible for leading the discussion for ~45 min of class. You will start your discussion with a short (<10 min) recap of the material presented via slides. Then you will transition to posing questions to the class and keep the discussion moving forward by having follow-up questions and activities, such as brainstorming research questions/solutions or identifying stakeholders. I will give you more information on this activity in class.

Final popular science project

The goal of this project is to present an environmental phenomenon or challenge that is apparent in Hawai'i and its connection to an Earth System Science concept in a way that is accessible to a wide audience. You will also present ideas for future research directions to understand/address the phenomenon/challenge. You will explain the science and present the research needs to a wide audience, hence the popular science angel. There will be multiple

checkpoints throughout the semester to update me on progress you are making and receive feedback from your peers. As this is a 400 level course, I am giving you freedom in deciding between two types of products: a popular science article or an infographic accompanied with a brochure (I will give examples in class). For whichever product you decide to create you will include 5 photographs that you took. I encourage you to think about how you can expand your audience outside our class.

See Canvas Modules for the tentative schedule.

Grading breakdown

* The grade listed in Canvas is NOT accurate because it does not include Participation and quizzes. If you are ever curious about your grade ASK ME :)

10% = Engaged participation with peers, me, and guests (requires arriving to class prepared)
10% = In-class/online discussions/posts
40% = Module quizzes (5)
10% = Team-led discussion
25% = Final popular science project
5% = Service learning (minimum of 8 hours) ~ I will provide you with a few opportunities and if you are unable to attend you will do a self-directed service project.

Late work policy

If something happens and you know you need an extension on an assignment, contact me. If we do not make a prior arrangement, 10% of the assignment points will be deducted for each day after the assignment due date.

A = Outstanding scholarship and an unusual degree of intellectual initiative
B = Superior work done in a consistent and intellectual manner
C = Average grade indicating a competent grasp of subject matter
D = Inferior work of the lowest passing grade
F = Failed to grasp the minimum subject matter; no credit given

Extra credit opportunities

Throughout the course I will notify you of opportunities to engage with ideas and scholars outside of Chaminade. Due to the pandemic, most of these opportunities will be webinars. You are also welcome to attend any other webinar you find on your own that is related to course material. I will give you up 3 extra credit points (depends on the quality of your submission) towards a quiz.

If you choose to participate in a webinar you will email me a screenshot of your registration and on Canvas you will upload 1 paragraph describing the topic of the webinar and the key ideas you took away -- under Discussion: Extra Credit.

Workload expectations
Students are expected to devote a minimum of 2 hours of focused work out of class for each 1 hour of class time per week.

Attendance and your grade
As an enrolled student in the course, I expect that you will attend every class unless you are sick or have a COVID-related situation. If you have more than a couple unexcused absences your grade will be negatively impacted. An important aspect of learning is active engagement. There is no substitute for being in class when it comes to understanding and thinking critically about the material. If you miss a quiz your absence must be excused in order to make up the quiz. Due to the COVID-19 pandemic, it is essential that you stay home if you have any symptoms -- your absence will be excused. Unexcused absences occur when playing hooky to go surfing, to sleep, to cram for an exam in another class, etc.

Course website
We will use Canvas and google drive.

Required course textbook
Skinner, B.J. & B.W. Murck. The Blue Planet: An Introduction to Earth System Science. 3rd Edition. Wiley. 2011. [ISBN:978-0-471-23643-6]

Classroom atmosphere

Learning through discussion
In class and online discussions provide an excellent opportunity to learn from classmates; to formulate and rethink your own understanding of the material; to practice thinking on your feet; and to critically evaluate evidence.

Over the semester, you will develop your skills in:
- Engaging substantively with different types of sources in critical and productive ways
- Posing thought provoking questions and collaborating with peers
- Effectively communicating your ideas, both orally and in writing

Expectations of students in class
You have the responsibility to commit yourself to your academic work in ways that will increase your learning. In this course, following the guidelines below will give you the best chance of growing as a critical thinking learner:

Arrive to every class on time, which means settled in your seat by the start time.

Approach the work of the course with the habits of mind critical for success at the university level: intellectual curiosity, critical engagement, and creativity.

Prepare by doing all the required reading and assignments before class. Feel free to bring printed copies of articles or notes you took while reading to guide you during discussions.

Listen actively and with respect to your peers. We listen to each other with dignity by thoughtfully grappling with the ideas of others and using non-verbal cues to show we are paying attention to them. Active listening is essential to engaged participation.

Speak up and challenge yourself to share your thoughts and ideas with your classmates in skillful and respectful ways. Being critical of your peers is essential for proper academic discourse, but we strive to do so respectfully. Since you are thinking on your feet, you are not expected to speak with perfect clarity. Class discussion is a cooperative enterprise, not a competition. A quality contribution is one that helps stimulate our learning. A thoughtful response to another student's comment leads to a much richer learning experience than a long and well-researched but disconnected comment.

Inquire by asking questions—this is a key aspect of learning. Ask yourself questions as you engage with the course material. Engage with your peers by asking questions. Often there is not a single "right" answer.

Expectations you can have of me

I will continually strive to be an engaging, thoughtful, and critical teacher. One of my primary goals is to create a learning environment where everyone feels included. You can expect me to make space for you to share your thoughts and questions. You can also expect me to listen to your feedback on how the class is going -- please share your observations and ideas with me.

Technical Assistance for Canvas

- Search for help on specific topics or get tips in Canvas Students
- Live chat with Canvas Support for students
- Canvas Support Hotline for students: +1-833-209-6111
- Watch this video to get you started
- Online tutorials: click on "Students" role to access tutorials
- Contact the Chaminade IT Helpdesk for technical issues: helpdesk@chaminade.edu or call (808) 735-4855

Tutoring and Writing Services

Chaminade is proud to offer free, one-on-one tutoring and writing assistance to all students. Tutoring and writing help is available on campus at Kōkua 'Ike: Center for Student Learning in a variety of subjects (including, but are not limited to: biology, chemistry, math, nursing, English, etc.) from trained Peer and Professional Tutors. Please check Kōkua 'Ike's website (https://chaminade.edu/advising/kokua-ike/) for the latest times, list of drop-in hours, and information on scheduling an appointment. Free online tutoring is also available via

Smarthinking. Smarthinking can be accessed 24/7 from your Canvas account. Simply click Account – Notifications – Smarthinking. For more information, please contact Kōkua ʻIke at tutoring@chaminade.edu or 808-739-8305.

Course Policies

Communication with me
I'm always happy to address your questions. I generally answer emails within 24 hours on weekdays and by the following weekday if sent on a weekend or holiday. Please do not wait until the last minute to ask questions. I expect you to communicate with me about any issues related to the course. Clear and timely communication can anticipate many standard problems that arise during a course. I am also super happy to just chat with you about topics you find interesting or you are curious about.

Grades of "Incomplete"
You may negotiate an incomplete grade with me when there are specific justifying circumstances. When submitting a grade the "I" will be accompanied by the alternative grade that will automatically be assigned after 90 days. These include IB, IC, ID, and IF. If only an "I" is submitted the default grade is F. The completion of the work, evaluation, and reporting of the final grade is due within 90 days after the end of the semester or term; this may not be extended.

Cell phones, tablets, and laptops
Out of consideration for your classmates, please set your cell phone to silent mode during class. Students are encouraged to bring laptops or tablets to class as I will at times assign online activities and readings that will require the use of a laptop or tablet. It is well known that these devices can be extremely distracting to your learning as well as the learning experience of your peers. When you are in class I expect that you are focused on the material and not multitasking by checking email, social media, or unrelated material on your device.

Disability Access
If you need individual accommodations to meet course outcomes because of a documented disability, please speak with me to discuss your needs as soon as possible so that we can ensure your full participation in class and fair assessment of your work. Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from the Counseling Center by the end of week three of the class, in order for instructors to plan accordingly. If a student would like to determine if they meet the criteria for accommodations, they should contact the Kōkua ʻIke Coordinator at (808) 739-8305 for further information (ada@chaminade.edu).

Title IX Compliance
Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or

psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting Campus Ministry, the Dean of Students Office, the Counseling Center, or the Office for Compliance and Personnel Services.

Attendance Policy
For the University wide attendance policies please the 2020-2021 Academic Catalog.

You are expected to regularly attend all courses for which you are registered. You should notify me when illness or other extenuating circumstances prevent you from attending class and make arrangements to complete missed assignments. Notification may be done by emailing me. It is my prerogative to modify deadlines of course requirements accordingly. Any student who stops attending a course without officially withdrawing may receive a failing grade.

Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. Any unexcused absence of two consecutive weeks or more may result in being withdrawn from the course, although I am not required to withdraw students in that scenario. Repeated absences put students at risk of failing grades.

Students with disabilities who have obtained accommodations from the Chaminade University of Honolulu ADA Coordinator may be considered for an exception when the accommodation does not materially alter the attainment of the learning outcomes.

Federal regulations require continued attendance for continuing payment of financial aid. When illness or personal reasons necessitate continued absence, you should communicate first with me to review the options. Anyone who stops attending a course without official withdrawal may receive a failing grade or be withdrawn at my discretion.

Academic Conduct Policy
Students should conduct themselves in a manner that reflects the ideals of the University. This includes knowing and respecting the intent of rules, regulations, and/or policies presented in the Student Handbook, and realizing that students are subject to the University's jurisdiction from the time of their admission until their enrollment has been formally terminated. Please refer to the Student Handbook for more details. A copy of the Student Handbook is available on the Chaminade website.

This syllabus and course schedule are living documents: they are free to change. I try to adhere as closely as possible, but there will be times in which we will take longer on a particular topic or add or delete a topic to enhance the course. I like to be able to react to you as the course proceeds and go with the flow a bit in order to make the course experience sort of custom fit to you!

You are responsible for all of the information in this document: not reading it does not make you exempt from knowing what's in it!

Use this syllabus to keep you organized and aware of important dates and how your grade is determined.