



**Chaminade**  
**University**  
OF HONOLULU

## **Course Syllabus**

[Chaminade University Honolulu](http://www.chaminade.edu)

3140 Waialae Avenue - Honolulu, HI 96816

[www.chaminade.edu](http://www.chaminade.edu)

**Course Number:** ENV202/ENV202L

**Course Title:** Environmental Physics/Environmental Physics Laboratory

**Department:** Environmental Studies, Natural Sciences

**Term:** Spring 2020

**Course Credits:** 3/1

**Lecture Meeting Days:** Tuesday and Thursday

**Lecture Meeting Hours:** 4-5:20 pm

**Lecture Location:** Sue Wesselkamper Science Ctr, Room 120

**Lab Meeting Days:** Friday

**Lab Meeting Hours:** 2:30-5:20pm

**Lecture Location:** Henry Hall, Room L4

**Instructor Name:** Jerelyn Watanabe

**Email:** [jerelyn.watanabe@chaminade.edu](mailto:jerelyn.watanabe@chaminade.edu)

**Office Hours:** By appointment

### **University Course Catalog Description**

ENV 202 Environmental Physics (3)

A detailed study of matter and energy in our environment and the transformations that they undergo.

Thermodynamics and the sources of energy; the uses of energy and the consequences of such uses. Particular emphasis on the environments of island ecosystems such as Hawaii. Cross-listed with PHY 111. Course must be taken concurrently with ENV 220L.

ENV 202L Environmental Physics Laboratory (1)

One three-hour laboratory period per week to accompany ENV 202. Students investigate matter and energy in our environment and the transformations that they undergo in order to learn firsthand the application of the relevant physical principles to environmental issues and sustainable solutions. Activities are conducted in the laboratory and in the field. Cross-listed with PHY 111L. Course must be taken concurrently with ENV 202.

### **Environmental Studies Program Mission Statement**

Chaminade University is a Marianist Institution committed as an extension of Marianist values to producing local, state, national and international servant-leaders adept at the multidisciplinary acts of understanding, communicating, ameliorating and preserving or developing more harmonious interactions with the environment. The University's major in Environmental Studies produces skilled intellectual pre-professionals considerate of the spiritual, ethical, scientific, economic, political, legal, historical and cultural aspects of environmental issues. Students in the Environmental Studies Program benefit from a learning experience which prepares them for the real world through coursework, fieldwork, research, service and apprenticeship in the community.

## **Marianist Values**

This class represents one component of your education at Chaminade University of Honolulu. An education in the Marianist Tradition is marked by five principles and you should take every opportunity possible to reflect upon the role of these characteristics in your education and development:

1. Education for formation in faith
2. Provide an integral, quality education
3. Educate in family spirit
4. Educate for service, justice and peace
5. Educate for adaptation and change

## **Native Hawaiian Values**

Education is an integral value in both Marianist and Native Hawaiian culture. Both recognize the transformative effect of a well-rounded, value-centered education on society, particularly in seeking justice for the marginalized, the forgotten, and the oppressed, always with an eye toward God (Ke Akua). This is reflected in the 'Olelo No'eau (Hawaiian proverbs) and Marianist core beliefs:

1. Educate for Formation in Faith (Mana) E ola au i ke akua ('Olelo No'eau 364) May I live by God
2. Provide an Integral, Quality Education (Na'auao) Lawe i ka ma'alea a kū'ono'ono ('Olelo No'eau 1957) Acquire skill and make it deep
3. Educate in Family Spirit ('Ohana) 'Ike aku, 'ike mai, kōkua aku kōkua mai; pela iho la ka nohana 'ohana ('Olelo No'eau 1200) Recognize others, be recognized, help others, be helped; such is a family relationship
4. Educate for Service, Justice and Peace (Aloha) Ka lama kū o ka no'eau ('Olelo No'eau 1430) Education is the standing torch of wisdom
5. Educate for Adaptation and Change (Aina) 'A'ohē pau ka 'ike i ka hālau ho'okahi ('Olelo No'eau 203) All knowledge is not taught in the same school

## **Environmental Studies Program Objectives and Skills addressed by ENV 202 and 202L**

Students graduating with a baccalaureate degree in Environmental Studies will:

### **Possess problem-solving skills from diverse disciplines for diverse populations**

- Be familiar with the process of conflict resolution
- Know the difference between fact and opinion
- Take a balanced outlook
- Be aware of the perspectives and value systems of others
- Be able to arrive at creative solutions

### **Possess a solid scientific foundation**

- Understand Earth Systems Science (Lab)
- Know the major material causes of environmental degradation (Lab)
- Know the benefits of recycling
- Be able to assess the veracity of information
- Have experience reading the primary scientific literature
- Be able to conduct research (Lab)
- Understand the role science plays in environmental problem-solving (Lab)

### **Know the roles and importance of laws, politics and economics in environmental issues**

- Know the economic challenges of recycling

### **Possess good written and oral communication skills**

- Be able to write a scientific research report (Lab)

### **Know the major environmental issues and their potential solutions**

- Be familiar with some of the proposed solutions to each of the major global and local environmental issues

### **Required Learning Materials**

Selected readings pdf/online including several chapters from:

The Blue Planet: An Introduction to Earth System Science, 3<sup>rd</sup> ed., by B. J. Skinner & B. W. Murck; John Wiley & Sons, 2011. ISBN: 9780470914021

Lab Notebook, Lab coat, and covered shoes required.

### **Course Websites:**

[ENV202-01-1](#)

[ENV202L-01-1](#)

### **Technical Assistance for Canvas Users:**

- Search for help on specific topics at [help.instructure.com](http://help.instructure.com)
- [Chat live with Canvas Support 24/7/365](#)
- Watch this [video to get you started](#) with online guides and tutorials
- Contact the Chaminade IT Helpdesk for technical issues: [helpdesk@chaminade.edu](mailto:helpdesk@chaminade.edu), or call (808) 735-4855

### **Assessment**

#### **Dialectical Journal (with Template) - Due Monday midnight**

Templates will be provided to document your understanding of the assigned readings. You will assess whether the reading is more factual or more of an opinion, record direct quotes, rewrite the important ideas in your own words, write a response to the ideas (What does this mean to you? Why is this important?), and write your questions.

#### **Conceptual Physics Problem Sets, Labs, & Exams**

**Problem Sets - Due dates in Class TBA**

**Labs - Due Thursday midnight**

Completing the physics problem sets and labs will be required for your success and is an extremely important way for you to communicate your understanding of physics concepts to me. Expect to be challenged and feel uncomfortable as you gain understanding, however, we will do most of this in class so that you will be supported by your instructor and your peers during the process.

In-Class Exams will consist of several written problems based on the assigned problem sets.

You may use a scientific or graphing calculator on problem sets and exams (but you won't need it). If you want to use a calculator on the exams, you will need one that is not your phone.

### **Grading Scale**

Letter grades are given in all courses except those conducted on a credit/no credit basis. Grades are calculated from the student's daily work, class participation, quizzes, tests, term papers, reports and the final examination.

They are interpreted as follows:

- 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, not satisfactory for fulfillment of prerequisite course work
- F Failed to grasp the minimum subject matter; no credit given

ENV 202 (3 credits)	ENV 202L (1 credit)
Problem Sets (in class) - 30% 60 points	Labs/Field Trip (in class) - 67% 80 points
Dialectical Journal - 25% 50 points	Research Project & Paper - 33% 40 points
2 Exams (in class) - 30% 60 points	
Final Exam - 15% 30 points	
A: 90 – 100% (180-200 points) B: 80 – 89% (160-179 points) C: 70 – 79% (140-159 points) D: 60 – 69% (120-139 points) F: below 60%	A: 90 – 100% (108-120 points) B: 80 – 89% (96-107 points) C: 70 – 79% (84-95 points) D: 60 – 69% (72-83 points) F: below 60%

### Advice for success

My hope is that you will consider yourself to be an active agent in designing and implementing creative solutions to environmental challenges that are important to you. Think of each experience, reading, lab, problem set, discussion as a resource for developing these creative solutions.

*Again, you can't connect the dots looking forward; you can only connect them looking backwards. So you have to **trust** that the dots will somehow connect in your future. Steve Jobs, Apple*

**Engage** with the readings through your dialectical journal. I encourage you to talk with me and your peers about the ideas presented. Some may make more sense than others in terms of the science; and you may have a strong emotional reaction to some of the topics. It's important to keep track of your questions and reactions because they will help you understand yourself better. And the better you understand yourself, the better you are able to communicate and connect with others. This is essential when talking about important issues. To be an agent of change you will need to inspire others through your actions and communication.

**Investigate** the concepts of physics in class. It may be extremely difficult and uncomfortable, especially if you haven't had positive experiences with math and science in the past. We will do the physics in class where you will be supported by your peers and your instructor. You will choose the level of mathematics that you engage with in the activities without penalty.

**Communicate** with me – ask questions, share your understandings and frustrations, let me know what’s going on in your life. I would like to know if there is anything that I can do to help you learn the physics that impacts your study and stewardship of the environment.

*“Showing up is half the battle”*

*[Adrianna Tan, CEO and Founder, Wobe](#)*

**Please email** me if you will be late or miss class. Your presence makes a huge difference to the class dynamic and we will all miss out when you are not in class.

## **Course Policies**

### **Late Work and Extra Credit Policy**

Late work and extra credit may be accepted at the instructor’s discretion.

### **Grades of "Incomplete"**

Incomplete grades may be assigned in accordance with Chaminade University policies

### **Instructor and Student Communication**

Questions for this course can be emailed to the instructor at [jerelyn.watanabe@chaminade.edu](mailto:jerelyn.watanabe@chaminade.edu). Online, in-person and phone conferences can be arranged. Response time will take place up to 48 hours.

### **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 the instructor will assign online activities and readings that will require the use of a laptop or tablet. Laptops and tablets should not be misused, such as checking distracting websites. Use your best judgment and respect your classmates and instructor.

### **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 Counseling Center at (808) 735-4845 for further information.

### **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**

Students are expected to attend regularly all courses for which they are registered. Student should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assignments. Notification may be done by emailing the instructor’s Chaminade email address or by leaving a message with the instructor’s division office. It is the instructor’s

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 by the instructor, although the instructor is 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, the student should communicate first with the instructor to review the options. Anyone who stops attending a course without official withdrawal may receive a failing grade or be withdrawn by the instructor at the instructor's discretion.

### Academic Conduct Policy

Any community must have a set of rules and standards of conduct by which it operates. At Chaminade, these standards are outlined so as to reflect both the Catholic, Marianist values of the institution and to honor and respect students as responsible adults. All alleged violations of the community standards are handled through an established student conduct process, outlined in the Student Handbook, and operated within the guidelines set to honor both students' rights and campus values.

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 [2019-2020 Student Handbook](#) is available on the Chaminade website.

### Proposed Schedule (subject to change)

	Tuesday Lecture Wesselkemper 120	Thursday Lecture Wesselkemper 120	Friday Lab Henry Lab 4	Dialectical Journal
Week 1: Jan 14, 16, 17	Newton's Laws	Newton's Laws	Build a Car Lab	Climate Optimist - Due Jan 20
Week 2: Jan 21, 23, 24	Defining Motion	Defining Motion	Measure Motion Lab (Error)	Laudato Si - Due Jan 27
Week 3: Jan 28, 30, 31	Describing Motion (graphs)	Describing Motion (graphs)	Improve your Car Lab	Blue Planet Ch 11 The Atmosphere (321-333) - Due Feb 3
Week 4: Feb 4, 6, 7	Powers of 10 (why scale matters)	Keeling Curve	No Class	Blue Planet Ch 11 The Atmosphere (333-345) - Due Feb 10
Week 5: Feb 11, 13, 14	Exam 1: Newton's Laws (Forces), Describing motion, Models	No Class	Keeling Curve Lab	XC Keeling 1960 - Due Feb 17

Week 6: Feb 18, 20, 21	Defining Density	Kinds of Energy	Density Lab	Blue Planet Ch 2 Energy - Due Feb 24
Week 7: Feb 25, 27, 28	Kinds of Energy	Conservation of Energy	Pendulum Lab	Blue Planet Ch 12 Wind and Weather (350-364) - Due Mar 2
Week 8: Mar 3, 5, 6	Conservation of Energy	Heat	Beach Lab Prep (Count); Write Methods; Find Research Articles	Otago Protocol - Due Mar 9
Week 9: Mar 10, 12, 13	Laws of Thermodynamics	No Class	Indigenous Research Methodology	Blue Planet Ch 12 Wind and Weather (364-376) - Due Mar 16
Week 10: Mar 17, 19, 20	Exam 2 Kinds of Energy, Conservation of Energy, Laws of Thermodynamics	Blue Planet Ch 10 The World Ocean	Waimanalo Beach Lab Data Collection 230-520 pm - Meet at Security Office	
Spring Break				
Week 11: Mar 31, Apr 2, 3	Defining Waves	Defining Waves	Waimanalo Beach Data Analysis	Blue Planet Ch 5 The Tectonic Cycle (112-125) - Due Apr 6
Week 12: Apr 7, 9, 10	Ocean Waves	Maundy Thursday - No class	Good Friday - No class	Blue Planet Ch 5 The Tectonic Cycle (125-139) - Due Apr 13
Week 13: Apr 14, 16, 17	Ocean Waves	Plate Tectonics	Plate Tectonics Lab	Research Article - Due Apr 20
Week 14: Apr 21, 23, 24	Sound Waves	Sound Waves	Sound Lab	Research Article - Due Apr 27
Week 15: Apr 28, 30, May 1	Electromagnetic Waves	Electromagnetic Waves	Waimanalo Beach Conclusion	XC Dialectical Journals - Due May 4
Final Exam: May 7			Final Exam 330-530 pm	