Chaminade University
OF HONOLULU

EDUC 612: Elementary Science Methods
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Class Location: Online	**Office Hours:** By Appointment Online
Class Time/Day: Online	**O&P Requirement:** 5 hours
Required Text: None	
Required Tools/Materials: LaMott: Earth Force Low-Cost Water Quality Monitoring Kit that is available from Nasco for 39.95+s&h (https://www.enasco.com/product/SB33597M?userZIPCODE=96815 (Links to an external site.)Links to an external site.). OR SOMETHING SIMILAR	

Helpful resources

Resource	Description
Na Wai `Ekolu	Connecting classroom to community through Citizen Science
Annenberg Learner	Videos for learning about teaching
Teaching Channel	Online community where teachers can watch, share, and learn diverse techniques to help every student grow.
Edutopia	K-12 Teaching Tips and Strategies that work
Hawaii Science Teachers Association	Hawaii Science Teachers Association is an excellent resource for free professional development activities. Waikiki Aquarium, Whale Watching, State Conference and Networking opportunities! PLEASE consider registering for this great organization!
Bernice Pauahi Bishop Museum	An in-site search for lesson/unit plans that are grades 3-5, connected to NGSS, HSTS and GLO's
Hawaii DOE - STEM competitions and programs	A growing list of links to STEM-related competitions, programs and fairs, plus a vetted list of STEM classroom units.

Catalog Description

EDUC 612 Elementary Science Methods (3)—This course focuses on helping the teacher uncover big picture concepts through inquiry-based science activities, then planning dynamic science units for the elementary classroom based on these understandings. Successful candidates will acquire an understanding of big ideas in physical, life, earth, and space science; develop inquiry-based science skills; and learn how to plan and teach meaningful units and lessons for K-6 students. *Requires 5 hours of observation and participation. Observation and Participation fee applies.*

Essential questions:
1. How do we engage K-6 students in meaningful and enduring science learning?
2. What are the big ideas in science with respect to content knowledge which includes science concepts in the areas of physical, life, and earth and space science, and what is the nature of science (NOS) with respect to science attitudes and habits of mind?

Mission Statement:
The mission of the education division is to foster the education of teachers and leaders in education through programs based in the liberal arts tradition, Catholic Marianist's values, current research, and best practices.

Marianist Values:
1. Educate 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

WASC Core Competencies:
1. Written Communication
2. Oral Communication
3. Quantitative reasoning
4. Critical Thinking
5. Information Literacy

#	Program Outcomes (POs)
1	**Content Knowledge** (*Knowledge of subject matter*)
2	**Developmentally Appropriate Practice** (*Knowledge of how students develop and learn, and engagement of students in developmentally appropriate experiences that support learning*)
3	**Pedagogical Content Knowledge** (*Knowledge of how to teach subject matter to students and application of a variety of instructional strategies that are rigorous, differentiated, focused on the active involvement of the learner*)
4	**Educational Technology** (*Knowledge of and application of appropriate technology for student learning*)
5	**Assessment for Learning** (*Knowledge of and use of appropriate assessment strategies that enhance the knowledge of learners and their responsibility for their own learning*)
6	**Diversity** (*Skills for adapting learning activities for individual differences and the needs of diverse learners and for maintaining safe positive, caring, and inclusive learning environments)*
7	**Focus on Student Learning** (*Skills in the planning and design of meaningful learning activities that support and have positive impact on student learning based upon knowledge of subject matter, students, the community, curriculum standards, and integration of appropriate technology*)
8	**Professional & Ethical Dispositions and Communication** (Professional dispositions, professionalism in teaching, and ethical standards of conduct consistent with Marianist values, and positive and constructive relationships with parents, the school community and professional colleagues)

#	**Course Learning Outcomes (CLOs)-** By the completion of this course students will be able to:
1	demonstrate an understanding of the big ideas and concepts in science, aligned with the three strands of the Next Generation Science Standards (NGSS) (i.e., Disciplinary core ideas, Crosscutting Concepts, Scientific Practices and Nature of Science (NOS).
2	Iteratively develop a connected series of learning experiences for students that: a. are focused on student outcomes and are aligned with varied assessments b. that used varied instructional strategies that addresses the needs of all learner abilities and types in the K-6 science classroom c. utilize technological tools and resources to support learning and better understanding of the subject matter in science.
3	Analyze and apply models of teaching and instructional strategies that inform sound decisions to effectively plan lessons and units that are relevant, meaningful, and place-based with respect to Hawai'i's students. Employ culturally appropriate pedagogical practices, and utilize community and place-based resources to facilitate the learning process for students in grades K-6. Introduce and employ the 5Es framework and Engineering Design Process (EDP) for teaching and assessment in science.
4	Develop and teach relevant and significant science lessons and activities to K-6 students, and then reflect on personal strengths, shortcomings, and areas needing improvement. Apply a variety of diagnostic, formative, and summative assessments to evaluate and support developmentally appropriate progress of the grade K-6 learner in the science classroom.

Alignment of learning outcomes

	CLO1	**CLO2**	**CLO3**	**CLO4**
Marianist Values		Educate for adaptation & change	Educate for service, justice & peace	Educate for service, justice & peace
Native Hawaiian Values	*'A'ohe pau ka 'ike i ka halau ho'okahi*: All wisdom is not contained in one school	*Lawe i ka ma`alea a ku`ono`ono*: Take wisdom and make it deep.	*'A'ohe pau ka 'ike i ka halau ho'okahi*: All wisdom is not contained in one school	
WASC Core Competencies	Information Literacy	Written Communication Critical Thinking	Critical Thinking	Written Communication Oral Communication Information Literacy Critical Thinking
Program Outcomes	1	1, 2, 4, 5, 6, 7	1, 2	1, 2, 3, 5, 7, 8
Essential Questions	2	1	1	1

Course Requirements:

Observation & Participations (O&P)

As part of this science methods course you are required to complete 5 hours of observation and participation. Given that there are only 10 weeks in this semester, it is imperative that you complete your O&P paperwork as well as get into your placement during the first week of the semester. It is important that you are able to ***observe science instruction*** in order to reflect upon science instruction, therefore communicate with your O&P teacher early in order to identify when science happens in the classroom. If the O&P teacher is willing, you may help out with activities, work with individual or groups of students, or you may even do some bit teaching in his/her classroom. Here is a letter that you may give to your O&P teacher describing what is expected of the O&P experience for this course.

It is of utmost importance that you show the teacher, students, and staff and the school respect when conducting yourself at this assigned school. Should you have further questions please contact the Field Services office through email at edu-fieldservices@chaminade.edu

Grade Dissemination Much of the evidence for learning in this course is written. Personal and meaningful feedback on assignments may take 30 minutes to multiple hours of time per student. In order to honor the time you invest in engaging in learning activities, so to should I invest time in the evaluation of that learning. My goal will be to return graded assignments within one week of the due date.

Grading scale

Percent	Grade
90 – 100%	A
80 – 89%	B
70 – 79%	C
0 – 69%	F

Course Policies

Course communication

Communication for this course including announcements, assignments and grades will be posted on Canvas.. When communicating with me electronically, please identify the course you are referring to in the the subject line (EDUC 612) of your e-mail. I am teaching three very different courses this semester, therefore I need to know which course material/activities to which I am responding. My goal is to respond to emails within 24 hours of receipt.

Late Work Policy

I do not accept late work. Deadlines are created in order to allow students time to process and collaborate on assignments as well as allow the instructor an opportunity to evaluate participation and engagement. When the deadline for an assignment has passed and a student has failed to engage in the required learning activity with his/her colleagues, that

opportunity/experience cannot be recreated or revisited. This is a 10 week course. Failure to complete assignments on-time even once can dramatically impact your grade.

Chaminade's Learning Management System (i.e., Canvas) will be configured to identify assignments that are submitted after the due date/time. I will share complete information on assignments to allow ample time for completion if you do not procrastinate. Please respect my time and your colleagues, plan ahead and submit your work on time, so that we can all progress through this learning experience together.

Rewrite/Resubmission Policy
Learning is an iterative process and multiple opportunities will be provided for students to revise their work. Students who wish to submit a revised assignment for an increased grade need to contact the instructor directly. Because course activities will include the process of revision, opportunities to rewrite and resubmit work will ONLY be provided on a case-by-case basis. **No rewrites will be provided on the final submission of the Signature Assignment** (i.e., unit plan).

Writing Policy:
All papers are to be word-processed, proofread, and solely the work of the author. All papers should demonstrate mastery of grammar, punctuation, spelling and syntax expected of college level students. If you need writing assistance, please seek help from Student Support Services.

Group Work/Cooperative Learning Policy
Learning and engagement in science and engineering is a process that requires the interaction and support of others. In other words, knowledge is socially constructed. In order to support learning of all students you will be expected to work cooperatively with others in this course. Your contribution to the online discussions supports your learning as well as the learning of others in this course.

Disability Access
The University is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students who need accommodations must be registered with Student Disability Services. 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 the instructor to plan accordingly. Failure to provide written documentation will prevent your instructor from making the necessary accommodates. Please refer any questions to the Dean of Students.

Grading

Basis for Final Grade Students will in this course will be evaluated in 2 areas. Learning is an iterative process which includes making mistakes, therefore, students will be provided feedback on their progress towards completion of the listed assessment items with opportunities to edit work that has been submitted.

Assessment Item	**%**		**CLO(s)**
Science Learning Activities	**40**	As part of this science methods course, you will participate in scientific investigation that models student inquiry. Evidence of your participation in these investigations will include data collection/analysis as well as dialogue with your colleagues about all of your investigations. You will need to create an investigation journal in Google Drive where you will keep track of your observations/data.	1
Pedagogical Learning Activities	**60**	**Mini Unit Plan -** Your Signature assignment will be a unit plan **Science Teaching & Learning -** There are many variables that contribute to effective science teaching. These include, but are not limited to: Nature of Science, Your personal orientation to the subject of science, Next Generation Science Standards, Assessment, Rubrics and the 5E Model). Each week you will consider one of these variables and reflect upon their impact on science learning **O&P Reflections - Rubric** Five journal entries (approximately 1 journal entry for every hour of O&P) with assigned prompts for tasks and reflections will be completed over the 10 weeks of this course, in an elementary science classroom setting. These entries will focus on different aspects of planning, teaching, assessment, and reflection in the science classroom. They will be assigned and turned in Canvas.	1, 2, 3, 4

Tentative Activities and Assignment Schedule

Week	Science learning	Pedagogical Learning
Jan 8	1. The Engineering Design Process	1. Understanding by Design (UbD) 2. My personal Science/Engineering Perspectives 3. O&P REquest Form
Jan 15	1. Water filter Design/Construction	1. NGSS 2. O&P placement and confirmation
Jan 22	1. Water Filter Tests	1. Learning Objectives 2. Bloom's Taxonomy - tool for developing strong and varied learning objectives 3. O&P reflection #1 - NGSS
Jan 29	1. Water Filter Tests 2. Data analysis	1. Assessment in science 2. Rubrics 3. O&P Reflection #2 - Prior knowledge and assessment
Feb 5	1. GLOBE Training - Intro and Hydrosphere	1. The 5E instructional Model 2. O&P Reflection #3 - Student engagement
Feb 12	1. GLOBE Training - water quality test	1. O&P Reflection #4 - Valuing student ideas
Feb 19	1. Communicating in science - the scientific poster	1. O&P Reflection #5 - Meeting the needs of all learners
Feb 26		1. Technology for science learning a. Simulations b. Data collection tools 2. Unit plan draft
Mar 5	1. Nature of Science	1. Unit plan revisions 2. O&P Timesheet Due
Mar 12		1. My REVISED science learning perspectives

University Policies

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. Should you want to speak to a confidential source you may contact the following:

- Chaminade Counseling Center 808 735-4845.
- Any priest serving as a sacramental confessor or any ordained religious leader serving in the sacred confidence role.

Attendance: As stated in the Chaminade University Student Handbook, students are expected to attend all classes for courses in which they are registered. *Students must follow the attendance policy of the* Division as appropriate for the course format (on-ground, hybrid, or online). Penalties for not meeting the attendance requirements may result in lowering of the grade, withdrawal from the course, or failing the course. A summary of the Education Division's attendance policy is attached at the end of this syllabus.

Writing Standards: All work submitted by Chaminade University students must meet the following writing standards. Written assignments should:

1. Use correctly the grammar, spelling, punctuation, and sentence structure of Standard Written English.
2. Develop ideas, themes, and main points coherently and concisely.
3. Adopt modes and styles appropriate to their purpose and audience.
4. Be clear, complete, and effective.
5. Carefully analyze and synthesize material and ideas borrowed from sources. In addition, the sources of the borrowed material should be correctly acknowledged to avoid plagiarism (see Plagiarism).

Plagiarism: "Plagiarism is the offering of work of another as one's own. Plagiarism is a serious offense and may include, but is not limited to, the following:

1. Complete or partial copying directly from a published or unpublished source without proper acknowledgement to the author. Minor changes in wording or syntax are not sufficient to avoid charges of plagiarism. Proper acknowledgement of the source of a text is always mandatory.
2. Paraphrasing the work of another without proper author acknowledgement.
3. Submitting as one's own original work (however freely given or purchased) the original exam, research paper, manuscript, report, computer file, or other assignment that has been prepared by another individual.

Please refer to your **Student Handbook** for other important institutional and academic policies including more detailed information regarding Grading, Plagiarism, Classroom Deportment, Freedom of Expression, Add/Drop, Disabilities, and others.

Diversity/Full Inclusion: Chaminade University of Honolulu is committed to a policy of non-discrimination and recognizes the obligation to provide equal access to its programs, services, and activities to students with disabilities. If a student is in need of accommodation due to a documented disability, he/she should contact the Counseling Center at 735-4845 or 739-4603. A determination will be made if the student meets the requirements for documented disability in accordance with the Americans with Disabilities Act. It is important to contact them as soon as possible so that accommodations are implemented in a timely fashion. Beyond the legal requirements Chaminade's Education Division is committed to an integral, quality education that begins with respect for the complexity and diversity of each person. Subsequently, faculty members attempt to engage the whole person with quality courses and activities that challenge the intellectual, emotional, aesthetic, physical, and ethical dimensions that make up each student's life experience.

Grades of "Incomplete"
The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course and the remaining work can be completed the next semester. Your instructor is the final authority on whether you qualify for an incomplete. Incomplete work must be finished within 90 days of the end of the semester or the "I" will automatically be recorded as an "F" on your transcript.

Education Division Attendance Policy

(Revised 3/8/10)
As stated in the Chaminade University Catalog, students are expected to attend all classes for courses in which they are registered.
Students must follow the attendance policy as stipulated in the syllabus of Education Division courses. Penalties for not meeting the attendance requirements may result in lowering of the grade, withdrawal from the course, or failing the course.

1. Excused Absences.
1.1. Since it is expected that students will participate in all class sessions, excused absences are only granted in exceptional situations where evidence is provided by the student to the instructor. Examples would include illness (with verification by a doctor) or the death of a close family member. Students should notify their instructors when a situation prevents them from attending class and make arrangements to complete missed assignments. While notification of the instructor by a student that he/she will be absent is courteous, it does not necessarily mean the absence will be excused.
1.2. In cases where excused absences constitute a significant portion of a course's meetings (e.g., more than 20% of on-ground course meetings, or a significant portion of online or hybrid courses), the instructor should refer the case to the Dean with a recommendation on how the case should be handled (e.g., withdrawal or incomplete).

2. Unexcused Absences. Chaminade University student policy states that in cases where unexcused absences are equivalent to more than a week of classes the instructor has the

option of lowering the grade. In the Education Division we have added detailed guidelines to cover different types of courses and class schedules:

2.1. **On-ground courses**. When unexcused absences total more than 10% of the number of classes will result in a lowering of the overall grade by one letter grade. A student who misses 20% or more should withdraw or be administratively withdrawn.

a. Online courses and online portion of hybrid courses. The instructor will specify and enforce expectations for online participation and receipt of assignments appropriate to the design of the course.