Chaminade University
OF HONOLULU

ED 324: Elementary Science Methods
Fall 2017
Credits: 3
T/R 1:00-2:20
Brogan, Room 101,

Instructor: Katrina Roseler
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Office Hours: T/R 9-11
Office Location: Brogan 126

Required Texts: Hendrick, G. (2013) Something Stinks, Tumblehome Learning, Inc.
Required Materials: Tabis water shoes -
Helpful Resources / Supplementary Materials:

GLOBE	An international science and education program that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to our understanding of the Earth system and global environment
Next Generation Science Standards	Within the Next Generation Science Standards (NGSS), there are three distinct and equally important dimensions to learning science. These dimensions are combined to form each standard—or performance expectation—and each dimension works with the other two to help students build a cohesive understanding of science over time.
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!
National Science teacher Association	Access podcasts, webinars, courses, online tutorials, NSTA Press resources, and online communities to sharpen your science teaching skills.
Edutopia	K-12 Teaching Tips and Strategies that work
The Wonders of Science and STEM	A solution for integrating science and STEM with the Wonders Reading Program

Course Catalog Description: ED 324 Elementary Science Methods (3)—This course focuses on helping the classroom teacher uncover *big picture* concepts through inquiry-based science activities, then planning dynamic science units 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. *Required: 6 hours of O&P Prerequisite: Pass Praxis I, ED 220, ED 221.*

Essential Question: Who is responsible for OUR clean water

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 Learning Outcomes (PLOs)

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:

#	Learning Outcome
1	Students will evaluate the cost and benefits of multiple engineering solutions to a local environmental issue through a presentation of models for the development of Waikiki.
2	Students will demonstrate the relationship between science, technology, and society within the context of a local environmental issue through the development of an interdisciplinary learning segment for K-6 students.
3	Students will create a plan for the sustainable management of local natural resources through a proposal to local decision makers (e.g., civic, non-profit).

Alignment of Course Learning Outcomes

	CLO 1	CLO 2	CLO 3
Marianist Values	Educate for service, justice & peace	Educate for service, justice & peace	Educate for service, justice & peace
WASC Core Competencies	Critical Thinking	Written Communication	Oral Communication
Program Outcomes	1	1, 3, 7	1, 8

Course Requirements

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 assessment items with opportunities to edit work that has been submitted.

Assessment Item	%	Description	CLO(s)
Science/ Engineering Activities	50	You will be evaluated on the development of your thoughts regarding different scientific/engineering ideas. These ideas will be evaluated based on your contributions Science/Engineering Journal, Presentations	1, 2, 3,
Pedagogical Activities	50	Water Quality Investigation, Pedagogical Journal, Something Stinks, O&P, Interdisciplinary learning segment for K-6 students, Presentations, Journal manuscript	2

Grade Dissemination Much of the evidence for learning in this course is written. Personal and meaningful on assignments may take 30 to multiple hours of time. In order to honor your 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.

Course Policies

Course communication: CUH uses Canvas as the Learning Management System (LMS). Communication for this course including announcements, assignments and grades will be posted on Canvas.

edTPA: The Hawai'i Teacher Standards Board (HTSB) approved the use of the *Teacher Performance Assessment* or edTPA, a performance-based assessment for Teacher Education Preparation Programs. The successful completion of an edTPA Portfolio will be required during the student teaching practicum beginning Spring semester 2016, and for teacher certification in the state of Hawaii beginning in 2019. Chaminade University has integrated edTPA assignments in all teacher education courses.

O&P Activities. There is a 6 hour O&P requirement for this course. It is imperative that you complete your O&P paperwork as well as get into your placement during the first few weeks of the semester. Should you have further questions please contact the Field Services office via email at edu-fieldservices@chaminade.edu

The "participation" component of this O&P is flexible and depends entirely on the classroom teacher you are observing this semester. While you may not get to see actual science blocks of teaching and assessment, you can certainly observe and note the integration of science with the other subject areas in the elementary classroom. If the mentor 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. ***It is of utmost importance that you show the teacher, students, and staff and the school respect when conducting yourself at this assigned school.***

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 16 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.

A letter to give to your OPT is available **here and provides your OPT my expectations for this term as a Chaminade student participating in the elementary classroom for this ED 324 course.*

This assignment (and the 6 total hours of O&P) must be completed prior to *finals week* for this course. Have all hours completed (forms signed and approved by the O&P teacher) and e-mailed to both Kathy Nishimura (Education Field Services Director) kathleen.nishimura@chaminade.edu, and to me, at katrina.roseler@chaminade.edu by, December 8th, 2017.

Grading scale

Percent	Grade
90 – 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
0 – 59%	F

Tentative Activities and Assignment Schedule

The activities provided below are specific to the Fall 2017 implementation of interdisciplinary ED 324/325 Elementary Science/Social Studies Methods Course. The primary focus of the fall course activities is engagement in science and thinking about the implementation of science learning experiences for K-6 students, however these experiences will provide a platform for ED 325. Engagement in science will be used as a platform for engagement in social studies or civic activity.

Week	Science investigation activities	Pedagogy activities
1 8/28	1. Review work from 2016 Students 2. Whole class discussion - Do we have access to clean water? 3. Review the water cycle 4. What is a watershed or Ahupua`a	1. Identify 3 different K-6 resources that could be used to inform students about the water cycle 2. Canvas Discussion - What are the strengths and weaknesses of the What is an Ahupua`a lesson plan.
2 9/4	1. Personal Science/Engineering Perspectives 2. What types of pollution impact a watershed? (physical, chemical, biological) 3. Tool tour - review the available resources collected for our investigations of the Ali Wai Field work/data collection 4. Investigation planning - what are we planning to do? 5. GLOBE Hydrosphere training	1. Canvas Discussion - What are the strengths and weaknesses of the Our Ahupua`a learning segment? ***Roseler out Sept 7 (PAM)**
3 9/11	1. Exploration of the Ala wai watershed. (Photos/Map) 2. Canvas Discussion - How is our Chaminade/Ala wai watershed different than what we have been taught or the models that are available? http://earthobservatory.nasa.gov/Features/Water/ 3. How do we impact the water cycle?	1. Track questions related to implementation in pedagogy journal 2. Canvas Discussion - What are the strengths and weaknesses of Can you trust the water unit plan
4 9/18	1. Data analysis of physical pollution objects (classify the trash) - what are the sources of this pollution and what can be done? 2. Engineering Design Options - Modeling	1. Canvas Discussion - What are the strengths and weaknesses of the Fostering Environmental Stewardship article

5 9/25	1. Fieldwork/Data collection? (Chemical pollution) 2. Engineering Design Options - Modeling	1. Class discussion of Something Stinks Chapters 1-12 2. Canvas Discussion - What are the strengths and weaknesses of the Think it, Build it, Test it, Refine it Unit? 3. O&P Reflection #1
6 10/2	1. Fieldwork/Data collection? (Chemical pollution) 2. Engineering Design Options - Modeling	1. Canvas Discussion - What are the strengths and weaknesses of the How clean is the River article. Would this be possible here in Hawai`i? ***Roseler out Oct 5 (PAM)**
7 10/9	1. Scholarships 2. Data analysis of chemical pollution - what are the sources of this pollution and what can be done? 3. Engineering Design Options - Modeling	
8 10/16	1. Fieldwork/Data collection Biological pollution 2. Engineering Design Options - Modeling	1. Canvas Discussion - What are the strengths and weaknesses of the Social Studies Lesson. 2. O&P Reflection #2
9 10/23	1. Fieldwork/Data collection Biological pollution continued 2. Data analysis of biological pollution objects - what are the sources of this pollution and what can be done? 3. Engineering Design Options - Modeling	1. Student/Teacher Roles during Science/ Engineering
10 10/30	1. Data analysis of biological pollution objects continued 2. Engineering Design Options - Modeling	1. Navigating the NGSS 2. Class discussion of Something Stinks Chapters 13-22 3. O&P Reflection #3 ***Roseler out Nov 2 (PAM)**
11 11/6	1. Communicating in Science - Posters	Lesson/Unit Planning 1. UbD 2. Learning Objectives
12 11/13		Lesson/Unit Planning 1. Assessment in Science 2. Rubrics 3. O&P Reflection #4
13 11/20	No Class on Thursday (Thanksgiving)	Lesson/Unit Planning 1. 5-E Model 2. NOS and ways of knowing
14 11/27		**1. Demo lessons** 2. O&P Reflection #5
15 12/4		**1. Demo lessons** 2. O&P Paperwork Due Dec 9th
Finals		**1. Manuscripts due Dec 10**

Course Policies

Late Work Policy
I do not accept late work. The 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 you 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., mini 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. Use of APA/MLA is required for all papers. If you need writing assistance, please seek help from Student Support Services and the Academic Achievement Program.

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 in-class and online discussion will support your learning as well as the learning of others in this course.

Appropriate Technology (Smartphones/Laptops/Tablets).
Laptops, tablets and smartphones will be used during course activities to support individual and group learning activities. Students are encouraged to bring their devices in order to support their learning. However, students are urged to minimize functions that will detract from learning. Chaminade University student classroom policy indicates that cell phones are not to be used in class without instructor approval. Distractions that inhibit your ability to fully engage in learning should be minimized or eliminated. Every effort will be made to motivate your engagement in course activities, however distractions such as text messages, emails and posts on social media take away from your ability to learn as well as your contribution to other in the course. Please make a conscious decision to minimize or eliminate distractions of this nature.

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.

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. Accelerated Semester Classes (10 classes): More than one absence lowers grade one letter. Missing more than two classes results in failure or withdrawal.
b. Undergraduate Day Courses TTh (30 classes): More than 3 absences lowers grade one letter. Missing more than six classes results in failure or withdrawal.
c. Undergraduate Day Courses MWF (45 classes): More than 4 absences lowers grade one letter. Missing more than nine classes results in failure or withdrawal.