SENCER CURRICULUM, SUSTAINABILITY, AND CIVIC ENGAGEMENT ACROSS DISCIPLINES AND INSTITUTIONS

SENCER - Science Education for New Civic Engagement and Responsibility

EXAMPLES OF CURRICULUM DEVELOPMENT FOR COURSES AND COMMUNITY ENGAGEMENT PROJECTS IN THE NATURAL AND SOCIAL SCIENCES WITH A STRONG EMPHASIS ON THE HUMAN SYSTEM AS A HAWAIIAN AND PACIFIC PLACE OF LEARNING AND BASED ON COLLABORATION ACROSS DISCIPLINES AND INSTITUTIONS.

THE COURSES AND PROGRAMS SHOWCASED HERE ARE DESIGNED TO TEACH THROUGH COMPLEX, CONTESTED, CAPACIOUS, AND CURRENT PUBLIC ISSUES AND COMMUNITY ENGAGEMENT WITH A FOCUS ON SUSTAINABILITY AND CLIMATE CHANGE ISSUES.

ENGINEERING:

CSE241 - Dr. Oceana Francis, PE
Engineering Hydraulics - Hydraulics of closed conduits and open channels with emphasis on engineering applications. Topics also include pump hydraulics, bridge hydraulics, urban drainage engineering, and floodplain management. Required CEE majors, senior level, 3 credit hours

CAPACIOUS ISSUES: Preliminary Engineering Analysis and Development of Retrofit Designs around sediment Retention at Honolulu State Bank. Wagner-Honolulu Priority Site. The existing structure—named and operated by Maxi County. Department of Public Works—delivers live sediments, cruise debris, and other pollutants to create turtles and coral reefs in the two pathways. The CEE 421 class project examines Honolulu’s wetland riverbeds and rainwater, original delta basin design parameters, and existing basin characteristics, operations and performance, analyze potential trapping efficiency and sediment retention for a suite of design alternatives; and evaluate the cost-effectiveness dam safety, contaminated sites, and hydrosystems.

ME 213 - Dr. Reza Ghobadi - Introduction to Engineering Design

CAPACIOUS ISSUES: Wave energy conversion, wind turbines, bikes for sailing, projectile motion.

Engineering Undergraduate Research (Dr. Reza Ghobadi) in partnership with: NSHEP, SAMSP, Cof. Dean’s Office, CTAF.

CAPACIOUS ISSUES: Energy maximization under turbine operation: ocean current energy conversion, wind turbines. Helmholtz ocean energy conversion.

ETHNIC STUDIES:

Ethnic Studies:

ES180 - Dr. Ulu Haasager - Hawai’i and the Pacific

CAPACIOUS ISSUES: Civic Engagement Projects - Climate change in the Pacific; lessons from traditional land use; working with natural sciences: sustainability.

SCIENCE EDUCATION FOR A NEW CIVIC ENGAGEMENT AND RESPONSIBILITY

PROGRAMS AND PROJECTS ACROSS THE CURRICULUM

Interdisciplinary and interinstitutional research and practice Indigenous practice, knowledge, and value systems.

Mālama i Nā Hawai‘i

Mālama i Nā Hawai‘i is a service learning program organized and run by instructors with the help of student coordinators and community partners. The Mālama i Nā Hawai‘i seer-veterans teaching are used to create meaningful learning experiences. They help with intercultural, maintenance, documentation, and oral history collections. The program works with a number of community partners and sites. We aim to develop a sense of place by creating a fund of knowledge and practical experience that bridges several academic disciplines.

The Native Hawaiian Initiative

The Native Hawaiian Initiative (NHI), is focused on creating a sense of belonging for students from all disciplines at the College of Social Sciences and focuses on the development of student leaders of Native Hawaiian and Pacific Islander ancestry who will be encouraged to become peer mentors and community advocates on both the college and community level through the Mālama, Pākō Pipeline, Ka Holo Wa'a, and various other programs and outreach opportunities.

SENCER SUSTAINABILITY & THE SOCIAL SCIENCES

Pākō Pipeline Program

Kā Holo Wa‘a

Summer Science - STEM

Waves of Change

SENCER STEM Immersion

SENCER H-2-2 Curriculum

Civil Engagement across the curriculum

SENCER IDEALS

SENCER roastly connects science and civic engagement by teaching through “complex, contested, capacious, current, and unexplored public issues in basic science.”

SENCER invites students to put scientific knowledge and scientific method to immediate use on matters of immediate interest to students.

SENCER helps reveal the limits of science by identifying the elements of public issues where science doesn’t help us decide what to do.

SENCER shows the power of science by defining the dimensions of a public issue that can be better understood with certain mathematical and scientific ways of knowing.

SENCER convenes the intellectual project as practical and engaged from the start, as opposed to science education modes that view the mind as a kind of “storage house” where abstract knowledge is acquired for vague potential uses.

SENCER seeks to extract from the immediate issues the larger, common lessons about scientific processes and methods.

SENCER locates the responsibilities (the burdens and the pleasures) of discovery as the work of the student.

SENCER, by focusing on contested issues, encourages student engagement with “multidisciplinary truths” and with civic questions that require attention now. By doing so.

SENCER hopes to help students overcome both unbounded fears and uninquiring awe of science.

SENCER ACROSS INSTITUTIONS KAPO‘IYALI COMMUNITY COLLEGE

Example - The Tiege Foundation Project led by Kapo‘i College and the Community College Center of Excellence (C3ECC). Made possible by the grants including seven Community Colleges in six states: HI, CA, AZ, LA, NJ, and NY (2 colleges).

COMMON CAPACIOUS QUESTIONS: integrated in first and second year courses that will be basic for rubric assessment and further development; “How do we build our commitment to civic and moral responsibility for diverse, equitable, healthy, and sustainable communities?”


Reflection prompts:

1) This term, which issue do you focus on: diversity, equity, health, and/or sustainability?
2) What were the central course concepts that deepened your understanding of these issues?
3) In what ways do you continually engage these issues? (example: lectures, readings, video, freeletics, online resources, online blogs, service-learning, community-based research, undergraduate research, other forms of active learning)
4) How will the ongoing engagement impact your personal life, work, and/or community?
5) How do you make moral decisions about what is right and wrong in any of your other classes or experiences, other civic or community, equitable, healthy, and sustainable communities?

How will the ongoing engagement strengthen your commitment to diverse, equitable, healthy, and sustainable communities?

SENCERIZING COURSES AND RESEARCH UNIVERSITY OF HAWAII AT MANOA

Marine Sciences

MARE 430 - Dr. Lisa Parr: Marine Field Experience for Teachers

Labs and activities using data from NOAA, PACHOS, and ARC GIS websites, world trips, and community engaged research.

CAPACIOUS ISSUES and engagement: Teaching Tiger sharks, sea turtles and monk seals and using GIS to display data; comparing water quality data from buoy and making predictions about the impact of storms; using NOAA marine data to make inferences about currents.

Sociology:


CAPACIOUS ISSUES: Students identify social problems and local agencies addressing them. They do research, shed light on the determinants of social problems, address the issues, and assess community-based programs. Issues include student homelessness, drug abuse, aging and end of life care, violence against women, teen pregnancy, etc.

Agriculture:

AG 230 - Dr. Norman Aramco: Sustainable Agriculture

CAPACIOUS ISSUES: Sustainable gardening through civic engagement students are working in the Kealakekua community to design and build a composting system and create a community seminar and a handbook on sustainable gardening.