Course Syllabus

Course Number: DS301

Course Title: COMMUNITY-ENGAGED COMPUTING

Department Name: Natural Sciences and Mathematics

College/School/Division Name: Chaminade University of Honolulu

Term: Fall 2023

Course Credits: 3

Class Meeting Days: Tuesday and Thursday

Class Meeting Hours: 8:30am – 9:50am

Class Location: DATA SCIENCE CENTER

Instructor Name: Rylan Chong, Ph.D.

Email: rylan.chong@chaminade.edu

Phone: (808)739-7445

Office Location: DATA SCIENCE CENTER

Office Hours: MTWThF 12:00pm-1:00pm

Instructor Website: NA

Other Professional Contact Information: NA

1. University Course Catalog Description

Lecture course addressing the use of data analytics, visualization and visualization for evidence-based decision support across diverse organizations, with special reference to the potential impact of data-science mediated decision support on community, grassroots and social advocacy groups. Students will design community impact strategies based on stakeholder engagement, develop tools such as dashboards and story boards using relevant data sets and present outputs to the community constituents for the course.

2. Course Overview

This course engages students to apply Data Science competencies to real and relevant problems and topics of interest to a community. Students will work individually or in small groups under the guidance of a faculty or mentor from the community. Students will learn how to apply research and Data Science techniques; think clearly about the issues; collect, organize and clean, and analyze data, formulate and interpret potential solutions, and communicate their results orally and with visualization.

3. Program Learning Outcomes

Upon completion of the undergraduate B.S. program in Data Science, Analytics & Visualization, students will be able to:

1. Source, describe and curate large data sets (‘Big Data’) that may not be amenable to traditional hardware and software, and conventional statistical analysis including domain and file specific metadata and the tools built around alternatives to tabular relations that allow the use of multimodal data;
2. Identify, describe and apply foundational mathematical and statistical concepts and operations, including the application of tools such as R, SQL and Python languages, that underlie data sourcing, management, analysis and interpretation;
3. Develop and implement approaches for effective data translation, dissemination and communication between domains, stakeholders and the public;
4. Identify and apply basic data modeling, predictive models and visualizations to support decision-making;
5. Integrate an awareness of ethical issues and collective standards to positively influence the application of data science to service, justice and peace in working towards solutions for societal problems;
6. Explain, plan and execute data science tasks within multidisciplinary teams;
7. Execute a domain-specific capstone project addressing a stakeholder-generated use case.

General Education Learning Outcomes Critical Thinking: Students will collectively contribute to, and individually reflect upon, the building and sustaining of community.

4. Course Learning Outcomes and Linkage to Program Learning Outcomes

Students who successfully complete this course will be able to:

Course Learning Outcomes	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	GELO
1. Explain the research process, software/project development methodologies, and data lifecycle.		X				X		X
2. Identify and define a community problem and topic.					X	X		X
3. Evaluate articles and perform a literature review.					X	X		X

4. Design a Data Science and study design.						X		X
5. Collect, store, curate, and analyze data using Data Science tools and techniques.	X	X		X		X		X
6. Create visualizations from results.			X	X		X		X
7. Learn how to interpret results scientifically and ethically.			X		X	X		X
8. Use project management tools.			X			X		X
9. Communicate results to a diverse audience.			X			X		X

5. Course Prerequisites

NA

6. Required Learning Materials

Learning materials will be provided on Canvas. These include Powerpoint PDF slides, tutorials, websites, articles, Google Drive, Zoom video conference application, consider.it application, and Microsoft applications.

7. Course Website:

All assignments and materials will be submitted via **Canvas Course Management System** unless stated otherwise. The assignments are to be clear, professional quality, and must be submitted in the requested format or the work will receive zero points. Please familiarize yourself with Canvas and visit the site regularly as materials, grades, announcements, and submission of assignments will be on Canvas.

Chaminade University Data Science Program Website: datascience.chaminade.edu

8. Technical Assistance for Canvas Users:

Search for help on specific topics at 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, or call (808) 735-4855

9. Assessment.

Assessments	**Points**
Communication and participation	10
Assignments (9x)	45
Check-in Assignment (3x)	15
Final project	30
Total	**100**

10. Grading Scale

Letter grades are given in all courses except those conducted on a credit/no credit basis. They are interpreted as follows:

A 90-100% 90 points or more: Outstanding scholarship and an unusual degree of intellectual initiative

B 80-90% 80-89 points: Superior work done in a consistent and intellectual manner

C 70-80% 70-79 points: Average grade indicating a competent grasp of subject matter

D 60-70% 60-69 points: Inferior work of the lowest passing grade, not satisfactory for fulfillment of prerequisite course work.

F <60% 59 points or less: Failed to grasp the minimum subject matter; no credit given

Feedback and grades on course deliverables (e.g., assignments, projects, quizzes, etc.) will be provided in the "Grades" of Canvas. Response time will take place up to 3 days.

11. Course Schedule

Week	Date	Lesson	Assignment
1	08/21-08/25	Introduce syllabus. Select topic for project Identify questions to explore Revisit GitHub Portfolio	
2	08/28-09/01	Introduce literature mapping.	
3	09/04-09/08	Continue literature mapping.	Assignment 1
4	09/11-09/15	Introduce study purpose – What the author(s) are studying. o Independent vs dependent variables Introduce study design o Research ▪ Richey and Klein Research methodology ▪ West and Dalley Methodological Yin vs. Yang ▪ Creswell Qual vs Quant o Experiments and non-experiments ▪ Maxfield and Babbie Experimental and quasi designs ▪ Shadish Quasi with both control and pretests ▪ Shadish Quasi lack of control or pretest	Assignment 2
5	09/18-09/22	Study design continue	Assignment 3
6	09/25-09/29	Introduce sampling Introduce study instruments and types of data collection. Data collection procedures and types.	Assignment 4
7	10/02-10/06	Introduce data analyses and reporting results	Assignment 5
8	10/09-10/13	Introduce data analyses and reporting results continue.	

9	10/16-10/20	Introduce interpretating results and limitations to studies	Assignment 6
10	10/23-10/27	Introduce literature review.	Assignment 7
11	10/30-11/03	Literature review continue.	Assignment 8
12	11/06-11/10	Zotero and APA formatting	Assignment 9
13	11/13-11/17	Work on project – Check-in	Check-in Assignment 1
14	11/20-11/26	Work on project – Check-in	Check-in Assignment 2
15	11/27-12/01	Work on project – Check-in	Final Check-in Assignment 3 Final project due 12/01
16	12/04-12/08	Finals week	

Credit Hour Policy:
This is a three-credit course requiring a minimum of 135 clock hours of student engagement, per the official CUH Credit Hour Policy. Students enrolled in this course are anticipated to spend 37.5 hours in class and 48 hours research and completing a project. There will be an additional 49.5 hours of work required beyond what is listed here (course readings, assignments, etc.), averaging 3.3 hours each week.

Course changes: The instructor reserves the right to change the course instruction, schedule, deadlines, course requirements, and grading throughout the semester. Changes will be announced through email or Canvas Course Management System.

12. Alignment of Natural Sciences Courses with Marianist and Hawaiian values of the University.

The Natural Sciences Division provides an *integral, quality education:* sophisticated integrative course content taught by experienced, dedicated, and well-educated instructors.

- We *educate in family spirit* – every classroom is an *Ohana* and you can expect to be respected yet challenged in an environment that is supportive, inclusively by instructors who take the time to personally get to know and care for you.
- We *educate for service, justice and peace*, since 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 can be formative, exploring human creativity and potential in the development of technologies and scientific solutions, the opportunity to engage in the stewardship of the natural world, and the opportunity to promote 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, na'auao, ohana*, *aloha* and *aina*. 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.

13. Additional departmental and university policies

13.1. Late Work Policy

Requests for extensions due to extenuating circumstances (medical problems, for example) will be considered, but work received after the deadline will not be graded. Computer problems are not an excuse for late work.

13.2. Grades of "Incomplete"

Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. An Incomplete Contract (available form the Divisional Secretary and the Portal) must be completed. 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 limit may not be extended.

13.3. Writing Policy

Paper requirements and formatting will be discussed during the course when the assignment is given.

13.4. Instructor and Student Communication

Questions for this course can be emailed to the instructor at [rylan.chong@chaminade.edu]. Online, in-person and phone conferences can be arranged. Response time will take place up to 3 days.

13.5. Cell phones, tablets, and laptops

Music Devices and Cellular Phones: Unless specifically permitted by your instructor, use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes, as it is discourteous and may lead to suspicion of academic misconduct. Students unable to comply will be asked to leave class. 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.

13.6. 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 (counselingcenter@chaminade.edu).

13.7. 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.

13.8. Attendance Policy

The following attendance policy is from the 2023-2024 Academic Catalog: 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, calling the instructor's campus extension, or by leaving a message with the instructor's school office (Natural Science and Math 1 (808) 440-4204). 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.

13.9. Academic Conduct Policy

See the current Undergraduate Academic Catalog and the Student Handbook available from Student Affairs.