



Chaminade University

OF HONOLULU

Course Syllabus

Course Number: DS401

Course Title: Healthcare Informatics and Analytics

Department Name: Data Science, Analytics and Visualization

College/School/Division Name: Natural Sciences and Mathematics

Term: Fall 2024

Course Credits: 3

Class Meeting Days: Tuesday and Thursday

Class Meeting Hours: 1:00pm – 2:20pm

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

This course examines foundations of health informatics including in terms of its context within the modern health care system and also an understanding of the competencies in relation to health informatics project management. Topics covered include the role of health informatics and analytics in relation to the Affordable Care Act, accountable care organizations, value- based care and population health. This course provides students with an overview of various clinical and administrative information systems and critical functions used in health care (electronic health records, computerized provider order entry, decision support, prescribing, telemedicine/telehealth, and revenue cycle).

2. Course Overview

This course will introduce health informatics and analytics. There will be three parts to this course. The first part will be to introduce the foundations of health informatics and analytics. The second part, students will revisit and refresh on R programming. The last part, students will perform health analytics using various methods on healthcare cases.

3. Program Learning Outcomes

Upon completion the B.S. degree program Data Science Analytics and Visualization, a graduating student will demonstrate the following competencies:

1. Source, describe, and curate large, multimodal data sets ('Big Data');
2. Apply foundational mathematical and statistical concepts and operations, including the application of up-to-date tools, 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. Apply basic data modeling, predictive models, and visualizations to support decision-making, independently or in teams;
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.

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
1. Describe health informatics and analytics.	X	X	X	X	X
2. Describe health informatics and analytics systems and technologies.	X	X	X		X
4. Describe health data, methods of collection, and analytics.	X	X	X	X	X
5. Describe data and information ethics, security, and privacy.	X				X
6. Code and evaluate health data.	X	X	X	X	X

5. Course Prerequisites

CS 201 or CS 202 and MA 331

6. Required Learning Materials

Learning materials will be provided on Canvas. These include Powerpoint PDF slides, tutorials, websites, articles, R-Studio, 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	5
Assignments 10x	50
Final project	45
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

11. Course Schedule

Date	Lesson	Assignment
8/19-8/23	<ul style="list-style-type: none">Introduce syllabusWhat is health informatics and analytics	
8/26-8/30	<ul style="list-style-type: none">Translational Research Informatics and Bioinformatics	
9/2-9/6	<ul style="list-style-type: none">Health Ethics and Laws	Assignment 1
9/9-9/13	<ul style="list-style-type: none">Healthcare Management and Technology Adoption	Assignment 2
9/16-9/20	<ul style="list-style-type: none">Telemedicine	Assignment 3
9/23-9/27	<ul style="list-style-type: none">Health information security and data privacy	Assignment 4
9/30-10/4	<ul style="list-style-type: none">Global health informatics	Assignment 5
10/7-10/11	<ul style="list-style-type: none">Artificial intelligence and big data	Assignment 6
10/14-10/18	<ul style="list-style-type: none">Special topic, analysis, and evaluation	Assignment 7
10/21-10/25	<ul style="list-style-type: none">Special topic, analysis, and evaluation	Assignment 8
10/28-11/01	<ul style="list-style-type: none">Special topic, analysis, and evaluation	
11/4-11/08	<ul style="list-style-type: none">Special topic, analysis, and evaluation	Assignment 9
11/11-11/15	<ul style="list-style-type: none">Special topic, analysis, and evaluation	
11/18-11/19	<ul style="list-style-type: none">Work on Project	Assignment 10

11/25-11/29	• Work on Project	
12/02-12/06	Finals Week	Final Project Due

Course Changes: The instructor reserves the right to change the 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 from 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.

The University provides a Chaminade email address for all students. Official Chaminade communications will be sent to the students' Chaminade email address and instructors will use only this email to communicate with students. It is the responsibility of the student to check their email frequently. Report email-related problems to the Helpdesk at 808-735-4855 or helpdesk@chaminade.edu

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

Chaminade University of Honolulu offers accommodations for all actively enrolled students with disabilities in compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and the ADA Amendments Act (2008).

Students are responsible for contacting Kokua Ike: Center for Student Learning to schedule an appointment. Verification of their disability will be requested through appropriate documentation and once received it will take up to approximately 2–3 weeks to review them. Appropriate paperwork will be completed by the student before notification will be sent out to their instructors. Accommodation paperwork will not be automatically sent out to instructors each semester, as the student is responsible to notify Kokua Ike via email at ada@chaminade.edu each semester if changes or notifications are needed.

13.7. Title IX Compliance

Chaminade University of Honolulu is committed to providing a learning, working and living environment that promotes the dignity of all people, inclusivity and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator.

13.8. Nondiscrimination Policy & Notice Nondiscrimination

Chaminade University of Honolulu does not discriminate on the basis of sex and prohibits sex discrimination in any education program or activity that it operates, as required by Title IX and its regulations, including in admission and employment. Inquiries about Title IX may be referred to the University's Title IX Coordinator, the U.S. Department of Education's Office for Civil Rights, or both and contact information may be found at the [Chaminade University Title IX Office Contact Information and Confidential Resources website](#). On-campus Confidential Resources may also be found here at [CAMPUS CONFIDENTIAL RESOURCES](#).

The University's Nondiscrimination Policy and Grievance Procedures can be located on the University webpage at: <https://chaminade.edu/compliance/title-ix-nondiscrimination-policies-procedures/>.

To report information about conduct that may constitute sex discrimination or make a complaint of sex discrimination under Title IX, please refer to the [Campus Incident Report form](#). Chaminade University of Honolulu prohibits sex discrimination in any education program or activity that it operates. The NOTICE of NONDISCRIMINATION can be found here: [Notice of Nondiscrimination](#).

13.9. CUH Alert Emergency Notification

To get the latest emergency communication from Chaminade University, students' cell numbers will be connected to Chaminade's emergency notification text system. When you log in to the Chaminade portal, you will be asked to provide some emergency contact information. If you provide a cellphone number, you will receive a text from our emergency notification system asking you to confirm your number. You must respond to that message to complete your registration and get emergency notifications on your phone.

13.10. Assessment for Student Work

With the goal of continuing to improve the quality of educational services offered to students, Chaminade University conducts assessments of student achievement of course, program, and institutional learning outcomes. Student work is used anonymously as the basis of these assessments, and the work you do in this course may be used in these assessment efforts.

13.10. Kōkua ‘Ike: Tutoring & Learning Services

Chaminade is proud to offer free, one-on-one tutoring and writing assistance to all students. Tutoring and writing help is available on campus at Kōkua ‘Ike: Center for Student Learning in a variety of subjects (including, but are not limited to biology, chemistry, math, nursing, English, etc.) from trained Peer and Professional Tutors. Please check [Kōkua ‘Ike’s](#) website for the latest times, list of drop-in hours, and information on scheduling an appointment. Free online tutoring is also available via TutorMe. Tutor Me can be accessed 24/7 from your Canvas account. Simply click on Account > TutorMe. For more information, please contact Kōkua ‘Ike at tutoring@chaminade.edu or 808-739-8305.

13.11. Attendance Policy

The following attendance policy is from the **2024-2025 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.

13.12. Academic Conduct Policy

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