

Data Science 495



Data Science Directed Research Fall 2025

Time: T/Th 2:30–3:50pm

Place: Data Science Center, Tredtin Hall

Instructor: Amber Camp

Office: Data Science Center, Tredtin Hall

Office Hours: M 2:30–4:30, T 1:30–2:30 & [by appointment](#)

Email: amber.camp@chaminade.edu

Required Materials: Class materials to be provided by instructor. Personal computer required.

Course Canvas: <https://chaminade.instructure.com/courses/43209>

Course Description: This course is a research method and directed research course in data science. The course will include lectures, discussions, assignments used for the directed research project, and a semester long directed research project. The goal of the course has two parts: 1) students will be provided tools and techniques that will assist on assessing research designs and strategies to develop their data science directed research project and 2) students will execute and complete their data science directed research project. Students in this course will learn the different research methodologies; assess literature for a literature review; develop a research question or problem to analyze; learn data collection methods; learn sampling approaches; design and develop a proposal; apply knowledge, skills, and abilities from past data science courses; analyze and evaluate data; and produce a directed research product and communicate the project in front technical and non-technical audience. Prerequisites: EN-102, COM-101, DS-301 & MA-331

Grading:

Item	Percentage
Onboarding Module	5%
Milestones (x3)	45%
Final Presentation	20%
Final Materials & Portfolio	15%
Weekly Check-ins	15%

Important Dates:

Milestone deadlines:

9/21 - Milestone 1
10/26 - Milestone 2
11/23 - Milestone 3

Final deadline:

12/11 - ALL materials

90–100%	A
80–89%	B
70–79%	C
60–69%	D
< 60%	F

Learning Outcomes

Program Learning Outcomes (PLOs) – Upon completion of B.S. program in Data Science, Analytics, and Visualization, the student will be able to:

1. Apply collection, storage, or cleaning of datasets;
2. Apply technologies to collect or manage data, analyze data, or program an application;
3. Analyze data using mathematics, statistics, prediction models, visualizations, or other forms of analytics to support decision-making;
4. Apply effective data communication approaches for stakeholders and the public;
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.

Course Learning Outcomes (CLOs) – Upon completion of DS 495, the student will be able to:

1. Evaluate and synthesize scholarly literature to frame a clear and feasible data science research question;
2. Design a directed research proposal that applies appropriate methodologies, sampling strategies, and ethical considerations;
3. Implement a research plan by collecting, analyzing, and interpreting data using computational and statistical techniques;
4. Communicate research findings effectively to technical and non-technical audiences through written, visual, and oral formats; and
5. Manage a semester-long independent research project, demonstrating planning, accountability, and self-direction.

Marianist Values – This class represents one component of your education at Chaminade University of Honolulu. An education in the Marianist Tradition is marked by five principles and you should take every opportunity possible to reflect upon the role of these characteristics in your education and development:

1. Education for formation in faith.
2. Provide an integral, quality education.
3. Educate in family spirit.
4. Educate for service, justice and peace, and integrity of creation.
5. Educate for adaptation and change.

The School of Natural Sciences and Mathematics 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 ‘āina. 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; and Pa‘a Na‘au, learn deeply.

Native Hawaiian Values – Education is an integral value in both Marianist and Native Hawaiian culture. Both recognize the transformative effect of a well-rounded, value-centered education on society, particularly in seeking justice for the marginalized, the forgotten, and the oppressed, always with an eye toward God (Ke Akua). This is reflected in the ‘Ōlelo No‘eau (Hawaiian proverbs) and Marianist core beliefs:

1. Educate for Formation in Faith (Mana) E ola au i ke akua (‘Ōlelo No‘eau 364) May I live by God.
2. Provide an Integral, Quality Education (Na‘auao) Lawe i ka ma‘alea a kū‘ono‘ono (‘Ōlelo No‘eau 1957) Acquire skill and make it deep.
3. Educate in Family Spirit (‘Ohana) ‘Ike aku, ‘ike mai, kōkua aku kōkua mai; pela iho la ka nohana ‘ohana (‘Ōlelo No‘eau 1200) Recognize others, be recognized, help others, be helped; such is a family relationship.
4. Educate for Service, Justice, and Peace (Aloha) Ka lama kū o ka no‘eau (‘Ōlelo No‘eau 1430) Education is the standing torch of wisdom.
5. Educate for Adaptation and Change (‘Āina) ‘A‘ohe pau ka ‘ike i ka hālau ho‘okahi (‘Ōlelo No‘eau 203) All knowledge is not taught in the same school

Alignment of Course Learning Outcomes

	CLO 1	CLO 2	CLO 3	CLO 4	CLO 4
Marianist Values		X		X	X
PLOs	X	X	X	X	X
Native Hawaiian Values	X	X	X	X	X
Gen Ed Learning Outcomes (if applicable)	X	X	X	X	X

Class Policies

Communication – Communication with the instructor will primarily take place over email. I will respond to your emails as soon as possible, within **36 hours**. All students are also welcome to attend [office hours](#) or stop by anytime my office door is open.

Quick reading: [Why College Professors Want You to Talk to Them](#)

Absences – Each student, regardless of the reason for absence, is responsible for completing all assigned work by the scheduled deadline, or in advance in cases of planned absences. Review the official [CUH Attendance Policy](#).

Time Allocation - This is a three-credit hour course requiring 135 clock hours of student engagement, per the official CUH Credit Hour Policy. Over the 15 weeks of this course, students will spend 37 hours in class (lecture, discussion, and classwork activities), 95 hours completing assignments, conducting literature reviews, and developing capstone projects, and 3 hours rehearsing the delivery of their final projects. This is an average of 9 hours per week, including class time.

Weekly Check-in - This course is centered on an independent research project, and steady progress is critical. Instead of traditional participation, students will complete a brief weekly check-in to document progress, note challenges, and outline next steps. Timely and thoughtful check-ins are required to earn credit.

Assignments and Late Work - All assignments must be submitted by the due date listed on the syllabus or as instructed in class. **Late assignments will not be accepted without prior arrangement.** Readings are also due on the date listed on the syllabus. Reading reviews take place on the date that the reading is listed on the syllabus.

Classroom Etiquette - Electronic devices should be used responsibly during class meetings. Devices should not distract the classroom environment, and students proving distracted, or distracting to others, will not earn participation credit for that session. If you are reading this, send me a picture of your favorite type of baked good for 1 extra credit point.

Assignment Drafts – Students may submit rough drafts of their assignments no later than one week in advance of the final due date for that assignment. Students who choose to do this will receive extensive comments and suggestions for improvements no later than 3 days before the assignment due date. **This is optional** but will benefit your work and your grade.

Extra Credit – Extra credit opportunities will be offered throughout the semester and will often require work outside of the classroom. The number of extra credit opportunities cannot be anticipated or guaranteed, so, while it is a good opportunity to boost your grade, the best way to do well in this class will be to participate regularly and submit quality work on time.

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 30 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 30 days after the end of the semester or term. This limit may not be extended.

Final Grades – Final grades will be computed following the grading structure printed above (see page 1). Grades will be regularly updated on Canvas, at least every two weeks. Final grades will be submitted to [Self-Service](#) at the end of the term.

Grades are interpreted as follows:

A 90-100%	Outstanding scholarship and an unusual degree of intellectual initiative
B 80-89%	Superior work done in a consistent and intellectual manner
C 70-79%	Average grade indicating a competent grasp of subject matter
D 60-69%	Inferior work of the lowest passing grade, not satisfactory for fulfillment of prerequisite course work.
F < 60%	Failed to grasp the minimum subject matter; no credit given

Changes to the Syllabus – While the provisions of this syllabus are as accurate and complete as possible, your instructor reserves the right to change any provision herein at any time. Every effort will be made to keep you advised of such changes, and information about such changes will be available from your instructor.

Important Information

Academic Honesty – Academic honesty is an essential aspect of all learning, scholarship, and research. It is one of the values regarded most highly by academic communities throughout the world. Violations of the principle of academic honesty are extremely serious and will not be tolerated.

Students are responsible for promoting academic honesty at Chaminade by not participating in any act of dishonesty and by reporting any incidence of academic dishonesty to an instructor or to a University official. Academic dishonesty may include theft of records or examinations, alteration of grades, and plagiarism, in addition to more obvious dishonesty.

Questions of academic dishonesty in a particular class are first reviewed by the instructor, who must make a report with recommendations to the Dean of the Academic Division. Punishment for academic dishonesty will be determined by the instructor and the Dean of Academic Division and may include an “F” grade for the work in question, an “F” grade for the course, suspension, or dismissal from the University.

For the most up to date information, please refer to the [Academic Honesty Policy](#) on the Chaminade University Catalog website.

TITLE IX AND NONDISCRIMINATION STATEMENT – 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. For pregnant and parenting students, I am also obligated to provide you with similar resources for support and protections available to you. My goal is to make sure that you are aware of the range of options available to you and have access to the resources and support you need.

Nondiscrimination Policy & Notice of Nondiscrimination – The university is committed to comply with all State and Federal statutes, rules, and regulations which prohibit discrimination. The university is committed to a policy of nondiscrimination on the basis of race, sex, gender identity and expression, age, religion, color, national origin (including shared ancestry and ethnic characteristics), ancestry, citizenship, disability, genetic information, marital status, breastfeeding, arrest and court record (except as permissible under State law), sexual orientation, or status as a covered veteran. Inquiries about Title IX or general Civil Rights concerns 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 [HERE](#). *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](#).

Hazing Prevention Resources and Athlete Helpline – Assists athletes, parents, coaches, and any allies interested in ensuring physical and mental safety for sports communities by offering confidential emotional support, crisis intervention, informational athlete-focused resources, and guidance related to concerns about any type of abuse—including hazing.

[Chaminade University's Hazing Policy:](#)

<https://catalog.chaminade.edu/studenthandbook/codeofconduct>

<https://hazingpreventionnetwork.org/athlete-helpline/>

<https://hazingpreventionnetwork.org/how-to-report-hazing/>

Basic Needs Resources – <https://chaminade.edu/basic-needs/>

Campus Safety/ SafeSwords – A program for students, faculty and staff, who may feel uncomfortable or unsafe walking alone on campus, at any time of the day. Call security, and a security professional will meet you at your location on campus. The security professional will escort you to your residence hall, car, etc. Students may utilize this when walking to and from night classes around campus or after late night events. [SafeSwords Webpage](#)

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.

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.

Student with Disabilities Statement – 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.

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.

School and Department Information

School of Natural Sciences and Mathematics

Office Location: Wesselkamper, Room 116

Phone: (808) 440-4204

If you have questions regarding Data Science, Analytics, and Visualization, reach out to your Instructor or the School of Natural Sciences and Mathematics.

Course Schedule

(Dated 8/28/25. Subject to change as needed)

Week	Weekly Focus	Deliverables
One 8/25-8/29	<ul style="list-style-type: none"> Review Syllabus 	
Two 9/1-9/5	<ul style="list-style-type: none"> Class meeting (Tue 9/2): What is directed research? Discuss milestones, expectations, selecting a project 	Onboarding Module due Fri 9/5
Three 9/8-9/12	<ul style="list-style-type: none"> Independent work: brainstorming project ideas Weekly check-in (class or office hours) BY FRIDAY! 	
Four 9/15-9/19	<ul style="list-style-type: none"> Independent work: brainstorming project ideas. Weekly check-in 	Milestone 1: Project Plan due Sunday 9/21
Five 9/22-9/26	<ul style="list-style-type: none"> Independent work on background research + analysis Weekly check-in 	
Six 9/29-10/3	<ul style="list-style-type: none"> Independent work on background research + analysis Weekly check-in 	
Seven 10/6-10/10	<ul style="list-style-type: none"> Independent work on background research + analysis Weekly check-in 	
Eight 10/13-10/17	<ul style="list-style-type: none"> Independent work on background research + analysis Weekly check-in 	
Nine 10/20-10/24	<ul style="list-style-type: none"> Independent work on background research + analysis Weekly check-in 	Milestone 2: Research & analysis due Sunday 10/26
Ten 10/27-10/31	<ul style="list-style-type: none"> Independent work on poster Weekly check-in 	
Eleven 11/3-11/7	<ul style="list-style-type: none"> Independent work on poster Weekly check-in 	
Twelve 11/10-11/14	<ul style="list-style-type: none"> (Tuesday holiday) Independent work on poster Weekly check-in 	
Thirteen 11/17-11/21	<ul style="list-style-type: none"> Class meeting (Tue 11/18): Peer feedback session Independent work on poster Weekly check-in 	Milestone 3: Poster Draft due Sunday 11/23
Fourteen 11/24-11/28	Happy Thanksgiving! Take a break!	
Fifteen 12/1-12/5	<ul style="list-style-type: none"> Check-in OPTIONAL 	Poster presentation date TBD
Finals 12/8-12/12	Final Materials & Portfolio due Thursday, December 11 at 5:30 pm	

Note: Final grades submitted by 12/18.