

Data Science 495



Data Science Directed Research

Fall 2026

3 credits

Department of Computational Sciences
College of Business, Innovation, and Technology

Time: M/W/F 1:30–2:20pm

Location: Computational Sciences Center, Tredtin Hall

Instructor: Amber Camp

Office: Computational Sciences Center, Tredtin Hall

Office Hours: T 2:00–4:00, W 9:00–10:00 & [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/46463>

Course Overview: This course is the culmination of your undergraduate work in data science. Over the semester, you will design, carry out, and present your own research project, drawing on the knowledge and skills you have developed throughout the program. Running in tandem with your research is a second, equally important focus: developing your identity as a researcher and a professional. We will spend time on how you articulate your strengths, make decisions about your work, communicate it to different audiences, and position yourself for what comes after graduation. You will leave this course with a completed research project and a clearer sense of the kind of data scientist you are.

Catalog 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	4%
Class discussion	10%
Milestones (x 4)	36%
Final Presentation	15%
Final Materials & Portfolio	15%
Weekly Check-ins	20%

Important Dates:

Milestone deadlines:

9/13 - Milestone 1
10/4 - Milestone 2
11/1 - Milestone 3
11/22 - Milestone 4

Final deadline:

12/10 - ALL materials

Final Grades – Final grades will be computed following the grading structure printed above. 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

Grades of "Incomplete" – Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. An Incomplete Contract 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.

Learning Outcomes

Program Learning Outcomes (PLOs) – Upon completion of the 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 developed across the program;
4. Communicate research findings effectively to technical and non-technical audiences through written, visual, and oral formats;
5. Manage a semester-long independent research project, demonstrating planning, accountability, and self-direction; and
6. Articulate a professional and scholarly identity, including individual strengths, the rationale behind research decisions, and goals beyond graduation.

Alignment of Data Science PLOs and Course Learning Outcomes

I = introduced, R = reinforced, M = mastery of skills and concepts, A = assessed in this course

DS-495 CLO	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5
1. Literature & research question			M		
2. Research proposal design	M		M		M/A
3. Implement research plan	M/A	M/A	M/A		
4. Communicate findings				M/A	
5. Manage independent project	M	M			
6. Professional & scholarly identity					M

Marianist Values –An education in the Marianist Tradition is marked by five principles. Reflect on how this course relates to one or more:

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.

DS-495 draws specifically upon the Marianist principles of educating in family spirit and educating for adaptation and change. As a culminating course, DS-495 asks you to work independently while remaining part of a cohort: we meet regularly as a group and review each other's work, so that independent research doesn't mean isolated research. Research also rarely goes as planned. Questions shift, data disappoint, and methods need revision--learning to adapt without losing the thread of your work is among the most durable skills this course can offer you.

Native Hawaiian Values – Education is central to both Marianist and Native Hawaiian culture — both seek transformative, value-centered learning that serves the marginalized. This is reflected in the 'Ōlelo No'eau (Hawaiian proverbs) below:

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 ('Ōlelo No'eau 1200) — Recognize others, be recognized, help others, be helped.
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 DS-495 Outcomes to Marianist and Native Hawaiian Values

Value	DS-495
Educate in family spirit ('Ohana)	Regular cohort meetings and structured peer review; independent research without isolation
Educate for adaptation and change ('Āina)	Research plans designed and revised in response to what the data and the literature actually show
Educate for service, justice and peace (Aloha)	Ethical dimensions of research design: what is asked, whose data, who is represented, considerations of service to society

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 instruction in this course, students will spend 35 hours in class (lecture, discussion, and classwork activities), 7 hours in mentoring meetings, 90 hours completing assignments, conducting literature reviews, and developing research 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. 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. Each student has three extension requests for the semester, and these requests must be submitted before the assignment due date.

Late assignments may receive reduced or no credit.

Classroom Etiquette - Our group meetings work best when people are present and engaged. Laptops and other devices are welcome and often necessary but keep your attention on the room when we're discussing each other's work.

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.

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, plagiarism, **and unauthorized and/or undisclosed AI usage**, in addition to more obvious dishonesty. See catalog section [Student Use of Artificial Intelligence in Academic Work](#) for further information.

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

AI (Artificial Intelligence) Statement – Chaminade University recognizes the increasing role of artificial intelligence (AI) technologies in academic and professional environments. AI encompasses, but is not limited to, generative AI platforms, automated writing or content generation software, coding assistants, and similar tools. Students must ensure all submitted work genuinely reflects their knowledge and effort. Using AI to produce or significantly complete graded assignments, exams or other academic tasks – defined as use that substitutes for or substantially replaces a student’s own analysis, reasoning or written expression – without explicit instructor approval is considered academic misconduct and will be dealt with according to the University’s Academic Honesty Policy.

If an instructor has reasonable grounds to question whether submitted work genuinely reflects a student’s own knowledge, authorship, or mastery of course material — or whether it meets the course’s expectations for AI use — the instructor may require the student to provide additional or alternative evidence of authorship and content mastery. Such evidence may include drafts, notes, revision history, source materials, process explanations, oral discussion, in class work, or completion of an alternative assessment. A student’s refusal or inability to provide such evidence may be considered, along with other available information, in evaluating whether the work meets course requirements and stated learning outcomes. Instructors will not rely solely on AI detection software or other automated tools in making grading or academic integrity determinations. Such determinations will be based on the totality of the available information and handled in accordance with applicable University policies and procedures. See the catalog section Student Use of Artificial Intelligence in Academic Work for further information.

Title IX and Nondiscrimination – 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](#).

Student with Disabilities Statement- Kōkua 'ike – Accessibility Services recognizes disability as a valued aspect of diversity and ensures equal access to the educational environment in accordance with Section 504 of the Rehabilitation Act; the Americans with Disabilities Act, as amended; and the principles and professional standards of the Association on Higher Education and Disability. Access is supported through reasonable accommodations and referrals to campus and community resources.

Appointments with the Accessibility Services Coordinator are available through Stellic at <https://chaminade.stellic.com> and may be held virtually or in person. Drop-in appointments are also welcome.

Students seeking support must meet with the Accessibility Services Coordinator as early as possible, even if they are unsure whether they have appropriate documentation of their disability or its impacts. The Accessibility Services Coordinator prioritizes listening to students' experiences and will discuss any documentation needs during the initial intake meeting. Students may seek support at any time. Learn more at <https://chaminade.edu/ada-accommodations>

Assessment of Student Work – Chaminade University may use student work anonymously to assess achievement of course, program, and institutional learning outcomes as part of ongoing quality improvement efforts.

Campus Resources & Support Services – The following resources are available to all Chaminade students. Reach out early — these services exist to support your success.

Resource	Description	Contact / Website
Accessibility Services (Kōkua ‘Ike)	Accommodations under Section 504 and ADA. Contact early — appointments via Stellic, virtual or in person.	ada@chaminade.edu chaminade.edu/ada-accommodations
Tutoring & Academic Coaching (Kōkua ‘Ike)	Tutoring and Academic Coaching Services support students’ progression toward their academic, personal, and professional goals with clarity and intention. Services include individualized support in English, math, nursing, sciences, and social sciences, as well as guidance in developing goals and study strategies.	chaminade.edu/tutoring-academic-coaching-services
Career Services	Career Services supports students throughout their career journeys. Services include individualized job search strategy coaching, resume reviews, job interview coaching, and access to career-related resources and opportunities.	chaminade.edu/career-services
Basic Needs Resources	Support for food insecurity, housing instability, and other basic needs.	chaminade.edu/basic-needs/
Title IX / Nondiscrimination	Reporting and support for sex discrimination and gender-based violence. Campus Incident Report Form available online.	chaminade.edu/titleix/resources-and-support/
Hazing Prevention	Confidential support, crisis intervention, and reporting for any type of abuse including hazing.	hazingpreventionnetwork.org/athlete-helpline/
Campus Safety / SafeSwords	Security escort service for anyone who feels unsafe walking alone on campus at any time of day. Call security and a professional will escort you to your destination.	chaminade.edu/student-life/security/campus-safeswords-program/
CUH Alert Emergency Notification	Emergency text system. Register your cell number via the Chaminade portal and confirm the text to complete enrollment.	chaminade.edu

Course Schedule (Dated 8/19/26. Subject to change as needed)

Week	Module	Assignment Due
One 8/17-8/21	Review Syllabus	Onboarding Module due Sun 8/23
Two 8/24-8/28	<u>Class meeting (Mon 8/24)</u> - Weekly check-in (class or office hours) BY FRIDAY!	
Three 8/31-9/4	- Independent work: developing project ideas - Weekly check-in	
Four 9/7-9/11	- Independent work: developing project ideas. - Weekly check-in	Milestone 1: Project Plan due Sunday 9/13
Five 9/14-9/18	- Independent work: background research + data wrangling - Weekly check-in	
Six 9/21-9/25	<u>Class meeting (Mon 9/21)</u> - Independent work: background research + data wrangling - Weekly check-in	
Seven 9/28-10/2	- Independent work: background research + data wrangling - Weekly check-in	Milestone 2: Data ready by Sunday 10/4
Eight 10/5-10/9	- Independent work: analysis - Weekly check-in	
Nine 10/12-10/16	Wellness Week (TBD) & Mon holiday	
Ten 10/19-10/23	<u>Class meeting (Mon 10/19)</u> - Independent work: analysis - Weekly check-in	
Eleven 10/26-10/30	- Independent work: analysis - Weekly check-in	Milestone 3: Analysis done by Sunday 11/1
Twelve 11/2-11/6	- Independent work: poster - Weekly check-in	
Thirteen 11/9-11/13	<u>Class meeting (Mon 11/9)</u> Wed holiday - Independent work: poster - Weekly check-in	
Fourteen 11/16-11/20	Amber traveling - Independent work: poster - Weekly check-in	Milestone 4: Poster complete by Sunday 11/22
Fifteen 11/23-11/27	Fri no class - Independent work: practice poster - Weekly check-in	
Sixteen 11/30-12/4	<u>Class meeting (Mon 11/30)</u> - Practice presentations!	Poster presentation Wed 12/2 12:30
Finals 12/8-12/12	Final Materials & Portfolio due Thursday, December 10 at 5:30 pm	

Note: Final grades submitted by 12/17.