HEALTH DATA SCIENCE (CERTIFICATE)

Visit program website. (https://epibiostat.ucsf.edu/certificate-health-data-science/)

Degree Offered: Certificate
Program Leadership:
John Kornak, PhD, Program Director
Admissions Inquiries:
Eva Wong-Moy, Graduate Affairs Manager

Program Description

The Certificate in Health Data Science (CiHDaS) is one-year program, ideal for those already working in the biomedical or pharmaceutical industries, focused on applying data science, biostatistics, machine learning, and epidemiological thinking in clinical research settings.

The CiHDaS program is intended for:

- Quantitative science learners interested in studying data science with a focus on biomedical applications.
- Numerically able biomedical scientists interested in applying data science methods in clinical, epidemiological and biological sciences.

Data science and biostatistical tools are increasingly necessary to accommodate the growing emphasis on precision and evidence based-medicine, the widespread analyses of electronic health records, and the improved capabilities to collect and store massive datasets.

We also offer a Master's of Science in Health Data Science (MiHDaS) (https://epibiostat.ucsf.edu/masters-degree-health-data-science/) as a two-year program that includes a capstone research project, teaching and industry experience.

Admission Requirements

- Bachelor's degree (BA/BS) or the equivalent from an accredited institution in a quantitative or biomedical science, or related field, with a minimum grade point average of 3.0.
- International applicants from non-English speaking countries must also demonstrate proficiency in English by:
  - Completing one year of full-time study with a minimum GPA of 3.2 at a college or university in the United States that has been accredited by an accreditation agency or state agency recognized by the U.S. Department of Education, *or*
  - Earning a degree from a college or university outside of the United States with instruction fully in English, *or*
  - Obtaining the minimum scores on the Test of English as a Foreign Language (TOEFL) - administered by ETS (http://www.ets.org/toefl/), or the International English Language Testing System (IELTS (http://www.ielts.org/)). Please see the Graduate Division's International Admission Requirements (https://graduate.ucsf.edu/intl-admission-requirements/) for minimum scores. Test scores are valid from these institutions for a maximum of two years from the test date. TOEFL official scores must be sent to UCSF's institutional code 4840; for IELTS scores, email a copy of your score report to HealthDataSci@ucsf.edu.

International students who have completed degrees in countries where English is the native language are exempt from the testing requirement.

- Three letters of recommendation
- Resume or curriculum vitae
- Statement of Purpose
- Personal History Statement

Learning Outcomes

To complete the program, scholars must satisfy program objectives, which are to:

- Learn a broad set of data science research methods and the techniques needed for the application of data science across biomedicine applications and research.
- Gain understanding of key issues that are particularly pertinent to the health sciences and evidence-based medicine, such as bias, confounding, interpretability, and causality.
- Plan and implement one or more health-related data science analysis projects.
- Analyze, interpret, and present data science research results.

Degree Requirements

- All core courses and required activities taken and passed with a grade C or higher.
- Maintain a cumulative GPA of 3.0 or higher (equivalent to a B average).

Core Courses

Course	Title	Units
Summer		
BIOSTAT 202	Opportunities and challenges of complex biomedical data	3
BIOSTAT 213	Programming for Health Data Science in R	2
EPIDEMIOL 201	Responsible Conduct of Research	0.5
	Units	**5.5**
Fall		
BIOSTAT 200	Biostatistical Methods in Clinical Research I	3
BIOSTAT 214	Programming for Health Data Science in R II	2-3
EPIDEMIOL 203	Epidemiologic Methods	4
DATASCI 220	Data Science Program Seminar I	1
	Units	**10-11**
Winter		
BIOSTAT 208	Biostatistical Methods II	3
BIOSTAT 216	Machine Learning in R for the Biomedical Sciences	3
DATASCI 220	Data Science Program Seminar I	1
	Units	**7**
Spring		
BIOSTAT 209	Biostatistical Methods III	3
DATASCI 225	Advanced Machine Learning for the Biomedical Sciences II	3
DATASCI 220	Data Science Program Seminar I	1
	Units	**7**
	Total Units	**29.5-30.5**