Data and Computational Science, Graduate Certificate

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Degree Awarded
Advanced Graduate Certificate in Data and Computational Science

Website
https://iacs.stonybrook.edu/opportunities/certificates/cdcs

Description

The Institute for Advanced Computational Science (IACS) at Stony Brook University was established in 2012 with a $20M private endowment. The institute has core faculty in a variety of computational disciplines (chemistry, physics, ecology and evolution, materials, atmospheric science, geoscience, social science, applied mathematics, linguistics, and computer science) and seeks to make sustained advances in the fundamental techniques of computation and in high-impact applications. Together with the Brookhaven National Laboratory Computational Science Initiative, our integrated, multidisciplinary team of faculty, students, and staff overcome the limitations at the very core of how we compute, collectively take on challenges of otherwise overwhelming complexity and scale, and individually and jointly define new frontiers and opportunities for discovery through computation.

IACS offers a 17-credit Advanced Graduate Certificate in Data and Computational Science (CDCS), available to both PhD and MS/MA students.

Admission Requirements

PhD and MS/MA matriculated students in the following departments are eligible to participate in the certificate program: Applied Mathematics and Statistics, Ecology & Evolution, Materials Science and Chemical Engineering, Chemistry, Computer Science, Geosciences, Molecular and Cellular Biology, Sociology, SOMAS, Physics and Astronomy, Neurobiology and Behavior, Pharmacology, Psychology, Tech and Society, Economics, and Linguistics. Students must have the permission of their advisors and their Graduate Program Directors before enrolling in the certificate program, and they must meet with the IACS Graduate Certificate Coordinator to map out a course schedule. Students must complete, with the requisite signatures, and submit to the Graduate School the form entitled Permission to Enroll in a Secondary Certificate Program.

Facilities

The institute is located in the IACS Building, next to the Laufer Center for Physical and Quantitative Biology. Our space houses the institute's faculty, students/postdocs (circa 45), and technical/administrative staff. The combined resources of the endowment, university and external funding provide for the institute a substantial computational capability (**circa 20TFLOP/s**) including substantial storage (circa 1Pbyte) and state-of-the-art 10GB networking throughout the building (optical fiber within the building to major hubs across campus). The institute provides to its members office space, office materials and supplies, administrative support, commonly used software packages including select compilers and libraries, technical assistance with computer administration and software installation, and use of the institute's computer clusters.

Degree Requirements

- 17 credits, courses can be double counted toward the certificate and the student's major
- Three core courses: (1) JRN 501: Distilling Your Message (2); JRN 503 Improvisation for Scientists (3); DCS 521 Introduction to Computational and Data Science (*Spring - Students are strongly encouraged to take DCS 521 in their first year of study*)
- Students are expected to take at least 3 credits in AMS and 3 credits in CS from the course catalog (cdcse-course-catalog-final.docx).
  ----- *CS students: at least 3 credits in AMS (not crosslisted with CS) and 3 credits in a non-CS crosslisted course in any department*
  ----- *AMS students: at least 3 credits in CS (not crosslisted with AMS) and 3 credits in a non-AMS crosslisted course in any department*
- Up to 6 credits of courses that are listed in the course catalog from the student's home department can count toward the certificate
- CDCS Course Catalog.pdf

Faculty

Alan C. Calder, PhD, Vanderbilt University, Physics and Astronomy

Barbara Chapman, PhD, Queen's University, Computer Science

Rezaul Alam Chowdhury, PhD, University of Texas Austin, Computer Science

Marivi Fernandez-Serra, PhD, University of Cambridge, Physics and Astronomy

Robert J. Harrison, PhD, University of Cambridge, Applied Mathematics and Statistics

Jeffrey Heinz, PhD, University of California Los Angeles, Linguistics

Xiangmin Jiao, PhD, University of Illinois at Urbana-Champaign, Applied Mathematics and Statistics

Marat Khairoutdinov, PhD, University of Oklahoma, SOMAS

Predrag Krstic, PhD, City College of CUNY, IACS

Benjamin Levine, PhD, University of Illinois at Urbana-Champaign, Chemistry

Heather Lynch, PhD, Harvard University, Ecology and Evolution

Owen Rambow, PhD, University of Pennsylvania, Linguistics

Matthew Reuter, PhD, Northwestern University, Applied Mathematics and Statistics

Yifan Sun, PhD, University of California, Los Angeles, Computer Science

Jason Trelewicz, PhD, Massachusetts Institute of Technology, Materials Science and Chemical Engineering

Yongjun Zhang, PhD, University of Arizona, Sociology

NOTE: The course descriptions for this program can be found in the corresponding program PDF or at COURSE SEARCH.