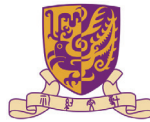




香港中文大學計算機科學與工程學系  
Department of Computer Science and Engineering  
The Chinese University of Hong Kong



香港中文大學統計學系  
**Department of Statistics**  
THE CHINESE UNIVERSITY OF HONG KONG

**JUPAS CODE:  
JS4416**

# **JOINT PROGRAMME**

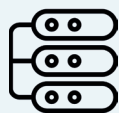
# **Computational Data Science**

## **(計算數據科學) - CDAS**

**STUDENT INTAKE: 20**



Algorithm



Parallel  
Computing



Distributed  
System



Computer  
Science



Deep  
Learning



Statistics



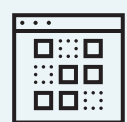
Sampling  
Methods



Statistical  
Modeling



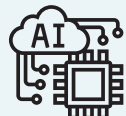
High-dimensional  
Statistics



Large-scale  
Inference



Big Data



Artificial  
Intelligence



Computational  
Physics



Computational  
Medicine



Computational  
Social Science

*Offered by Department of Computer Science and Engineering and Department of Statistics*

# BACKGROUND

The data-driven era creates strong interests and needs of analyzing, storing, distributing, and sharing massive amounts of data using sophisticated data analytics and machine learning algorithms and methodologies, with applications in multiple disciplines including science, social science, finance, public health, medicine, engineering, and telecommunications. Huge job demand of data analysts in both local and global employment markets has been witnessed.



## INTRODUCTION

This new programme focuses on in-depth academic training in the domain of computational data science.

It aims to equip students with the capabilities of applying both

- (1) high-performance parallel and distributed computing for big data manipulation, and
- (2) data-driven statistical procedures, methodologies and theories for mining patterns, making predictions, and discovering sciences from large and complex datasets.

Such capabilities enable students to develop cutting-edge massive data analytics and management solutions that are of practical interest to academics, industry, and society.

## SPECIAL FEATURES OF THE CURRICULUM

- Solid inter-disciplinary curriculum;
- "Computer Science/Statistics + X" programme;
- Several specializations (i.e., the X component) that apply the core knowledge of computational data science to different science, engineering, and medicine disciplines:
  - (a) Computational Data Science;
  - (b) Computational Physics;
  - (c) Computational Medicine;
  - (d) Computational Social Science

	CDAS
Faculty Package	Programming Linear Algebra Advanced Calculus
Major Foundation	Discrete Mathematics Data Structure Probability Statistics Python R, SAS C++
Required courses	Algorithms & Computer Systems Artificial Intelligence Operating Systems Machine Learning / Data Mining / Statistical Learning Survey Methods / Statistical Computing / Bayesian Learning Statistical Inference / Applied Regression Analysis Nonparametric Statistics / Categorical Data Analysis
Research Practicum	Final Year Project
	<b>Stream</b>
Elective courses	Computational Data Science Computational Physics Computational Medicine Computational Social Science " *Engineering Leadership, Innovation, Technology and Entrepreneurship (ELITE) Stream (Faculty of Engineering)"

# ADMISSION REQUIREMENTS (2022 ENTRY) OF CDAS

HKDSE SUBJECT	MINIMUM LEVEL	SUBJECT WEIGHTING
HKDSE Core Subjects		
English Language	4	1.5
Chinese Language	3	1
Mathematics (Compulsory Part)	4	2
Liberal Studies	2	1
HKDSE Elective Subjects		
Any two subjects	3	#

#The CDAS programme accepts any subject as elective, with a subject weighting of

**2 for Mathematics Extended Module 1 or 2;**

**2 for Economics, Biology, Chemistry, Physics, Combined Science and Information and Communication Technology;**  
**1 for any other subjects.**

Selection is based on the Best 5 HKDSE subjects with subject weighting applied.



## NON-JUPAS ADMISSIONS SCHEME

Students with non-HKDSE qualifications (e.g. public examinations such as the HKCEE, HKALE, IB, SAT, GCE, GCSE, Gaokao etc.) and diploma / sub-degree credentials are welcome to apply via the Non-JUPAS admission scheme.

## EXCHANGE

Students may participate in student exchange programmes organized by CUHK. The University and Colleges offer more than 280 student exchange programmes.

## UNDERGRADUATE RESEARCH TRAINING

All students of our programme are required to take a 6-unit research-driven project course to work with professors of the University Central Cluster on real-world interdisciplinary problems. Via the project, students will learn how to formulate scientific or industrial problems into data science problems and tackle them with computational and statistical methods. As a result, our graduates will be well-prepared to join the workforce to solve practical computational data science problems upon graduation.

## LOCAL/INTERNATIONAL COMPETITIONS


A variety of non-classroom activities throughout the school year will be arranged. In particular, students are encouraged to participate in project competitions in data analytics or related disciplines, such as supercomputing contests, programming contests, Knowledge Discovery and Data Mining Cup, Microsoft Imagine Cup, etc. Through the competitions, students will learn how to address real-world problems in computational data science. Both the hands-on experience and ranking from the competitions will be a huge plus for students' future job search and career development.


## CAREER PROSPECTS


Computational data science is a rapidly evolving interdisciplinary field that is in high demand. Future graduates will be prepared for careers that create order and derive meaning from huge amounts of data. This program prepares graduates for careers require the deep knowledge and skills of machine learning, database management, and high-performance computing with an adequate statistics background. Future Alumni could work as business intelligence analysts, data mining engineers, data modelers, data scientists, engineers and developers, data warehouse architects and research analysts, etc.

(This new programme to be introduced in 2022-23 is subject to confirmation of the University Senate.)

## Contact us

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<https://www.cse.cuhk.edu.hk/admission/cdas/>