統計學系

Department of
Statistics

DEPARTMENT OF STATISTICS

▌OUR **PLEDGE**

The Department of Statistics at The Chinese University of Hong Kong was founded in 1982. Our primary mission is to provide a quality education and undertake cutting-edge research. In today's Information Age, statistics has become an indispensable tool in business, social studies, engineering, medicine, clinical studies, genetics and marketing. To meet the increasing demand for well-rounded statistics graduates, we offer undergraduate programmes in Statistics and Risk Management Science. We also offer postgraduate programmes leading to MPhil and PhD degrees to students who intend to become experts in the field.

Details of the Risk Management Science Programme are presented in a separate leaflet.

▌UNDERGRADUATE PROGRAMME IN **STATISTICS**

The curriculum of the Statistics Programme is specially designed to prepare students for careers in fields such as business, teaching and research. The curriculum covers the core of the subject and maintains a balance between theory and practice. Students can choose to specialise in either the Data Science and Business Statistics Stream, the Statistical Learning and Data Mining Stream, or the Data Analytics Stream.

> The Data Analytics Stream was newly introduced in 2016. The curriculum includes interdisciplinary subjects covering the fields of Statistics, Mathematics and Computer Science. The objective of the stream is to meet the increasing need for skilled data analysts to turn massive data into usable information for decision making and prediction.

	Data Science and Business Statistics Stream	Statistical Learning and Data Mining Stream	Data Analytics Stream
Required Courses			
1st Year	• Introduction to Statistics OR Statistics for Life Sciences • Data Science Toolbox • University Mathematics OR University Mathematics for Applications • Any One Course from Groups A/B/D in the Science Faculty Package		
			• Introduction to Computing Using C++ OR Introduction to Computing Using Java OR Computer Principles and C++ Programming OR Computer Principles and JAVA Programming OR Computer Principles and Python Programming
2nd Year	• Basic Concepts in Statistics and Probability I • Basic Concepts in Statistics and Probability II • Linear Algebra OR Methods of Matrices and Linear Algebra	• Programming Languages for Statistics • Workshop on Data Exploration and Technical Writing	
			• Introduction to Data Science
3rd Year	• Applied Regression Analysis	• Workshop on Data Analysis and Statistical Computing	
	• Foundation of Financial and Managerial Statistics	• Statistical Inference	• Statistical Inference
4th Year	• Statistics Projects OR Practicum		
Elective Courses			
	8 courses from a list of courses in RMSC and STAT, 1 capstone course from STAT	7 courses from a list of courses in RMSC and STAT, 1 capstone course from STAT	8 courses from a list of courses in CSCI, ENGG, RMSC and STAT, 1 capstone course from STAT
Major Units	63	63	69

Examples of Elective Courses from Statistics (STAT):
- Survey Methods
- Recommender Systems
- Nonparametric Statistics
- Statistical Computing
- Applied Multivariate Analysis
- Statistical Principles of Deep Learning with Business Application
- Introduction to Stochastic Processes
- Data Mining and Statistical Learning
- Statistical Techniques in Life Sciences
- Actuarial Science
- Time Series
- Categorical Data Analysis
- Bayesian Learning
- Survival Modelling

Examples of Elective Courses from Risk Management Science (RMSC):
- Simulation Methods for Risk Management Science and Finance
- Financial Data Analytics with Machine Learning
- Statistical Modelling in Financial Markets
- Theory of Risk and Insurance
- Stochastic Calculus for Finance and Risk
- Operational Risk Management

CAREER PROSPECTS

Although some of our graduates continue their studies and pursue a higher degree, most join the workforce after graduation. The career development of our graduates shows that they are well-received in various sectors of the community. Many now hold key positions in the civil service and in private sector fields such as business, finance and banking, and research and marketing.

Government

Business, Insurance, Banking and Finance

Statistics, Consultancy and Other Professional Services

Information Technology

Others

Education

INTERNSHIPS

The internship programme reflects our continued efforts to enhance our students' career prospects. The main objective is to provide participating undergraduate students with opportunities to engage in research activities at both academic and non-academic institutions and to equip them with additional professional and statistical expertise. The Department seeks out available intern positions at both government and private institutions.

KAN Chun Yu Matthew
(Summer intern at the Census and Statistics Department, The Government of HKSAR)

During my summer internship at the Census and Statistics Department (C&SD), I focused on researching monthly wages, hourly wages and weekly working hours for labour in Hong Kong. This invaluable experience allowed me to apply my data analytic skills in practical situations effectively. Throughout the research, I conducted in-depth analysis on various imported labour schemes and established a forecasting model using neural network successfully. This model utilized gradient descent and smoothing average techniques implemented through Excel and Python. Additionally, the internship provided me with the opportunity to strengthen my proficiency in data visualization using SAS Viya. In short, I believe that these two months internship at C&SD not only granted me a better insight of the department, but also provided an exceptional platform to further refine my statistical skills.

YEUNG, CHING HIN
(Summer Intern at the Census and Statistics Department, The Government of HKSAR)

Participating in a departmental internship presents a valuable opportunity for me to acquire hands-on research experience while still attending school. This type of internship offers numerous benefits, including the chance to apply classroom knowledge to real-world scenarios, enhance technical abilities, and broaden my horizons in the research fields.

As an example, the Census and Statistics Department may offer a potential internship opportunity for students during the summer of 2023. This role could entail providing support in various areas such as consumer price indices, trade statistics, and demographic statistics, among others.

EXCHANGE PROGRAMMES

Well recognised as valuable learning opportunities, exchange programmes are popular among statistics students. Every year many of them participate in student exchanges.

FONG Chun Hei

Last semester, I got a valuable chance to exchange to American University. It is such a great university with abundant resources and full of nice and decent people. The US is a multi-racial country with diverse opinions and values. Different states of the US got their own charisma. You will be charmed by Mexican-liked states like Florida. You will be attracted by the metropolitan cities like New York City. The historic capital Washington DC is a must visit. A slow pace of living is the biggest difference between Hong Kong and the US. Trust me, everyone will be in love with such a great country.

LAM Chui Pik

I studied at Nanyang Technological University through the OAL exchange programme. The most important thing I have learnt is to integrate myself into a new environment as quickly as possible. It seems to me that the biggest difference between Singapore and Hong Kong is the culture. Singapore is a multi-racial country that is accepting of different customs, beliefs and cultures. During this journey, I met people from various backgrounds and heard their unique stories. This has broadened my horizons and opened my mind. I have also taken some major courses in Singapore to compare different teaching methods and materials in CUHK and NTU, which has given me a deeper understanding of my major.

ALUMNI

Several alumni are happy to share their experiences as CUHK Statistics graduates.

LAU Ho Cheung (BSc in Statistics, 2024)
Pursing Postgraduate Study

I am studying in Master of Science in Statistics. During my study of Bachelor programme, I gained a deep understanding of statistical methods and techniques, from probability theory and regression analysis to experimental design and statistical inference. The programme offered me challenges. I was required to think critically, solve problem, and communicate complex information effectively. Besides, statistics is an important field, the analytical and quantitative skills in statistics can be applied to industries ranging from data analysis and finance to marketing and technology.

IP Ka Yu Brian (BSc in Statistics, 2023)
Risk Management Officer (Bank of the Philippine Islands)

In a world filled with uncertainty, making well-reasoned decisions can be a significant challenge. From choosing which course to take to considering which stock to invest, the ability to extract meaningful insights is crucial. This is where statistics emerges as a powerful tool. Statistics is the art of distilling large datasets into few key numbers that encapsulate essential information. By applying statistical methods, we can make accurate predictions and logical decisions. Through the CUHK statistics programme, you will learn techniques in deeply understanding data and uncover its hidden insights. This knowledge will not only enhance your data comprehension but also empower you to make well-informed choices that drive greater success. Whether you are navigating financial markets or optimizing workplace processes, by mastering the principles of statistics, you will acquire a versatile set of skills that can be applied across a wide range of domains, leading to increased prosperity and achievement.

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