



# Programme Information

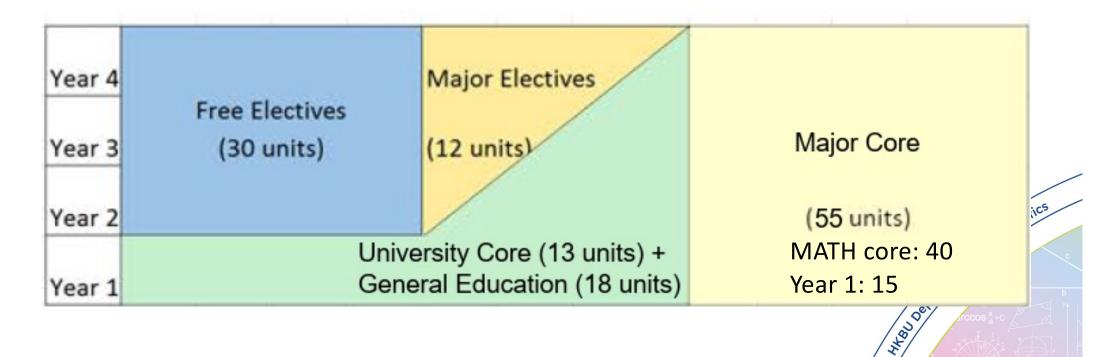
# BSc (Hons) in Mathematics & Statistics

- Both mathematical & statistical concepts.
- Flexible career paths.
- High demand for data scientists, statisticians.
- Option of 0, 1 or 2 concentrations:
  - Applied Statistics
  - Data Science



# How To Get a Math & Stat Degree

## • Minimum of 128 units



# **Major Core Courses**

- MATH1005 Calculus I
- MATH2225 Calculus II
- MATH2205 Multivariate Calculus
- MATH2206 Probability & Statistics
- MATH2207 Linear Algebra I
- MATH2215 Mathematical Analysis
- MATH2216 Statistical Methods and Theory

- MATH3205 Operations Research I
- MATH3206 Scientific Computing I
- MATH3405 Differential Equations I
- MATH3805 Regression Analysis
- MATH3806 Multivariate Statistical Methods
- MATH4998 Mathematical Science Project I

AND Department C

# **Career Options**

Data Science

- Data Scientist/Engineer, ML AI Scientist/Engineer

- Applied Statistics
  - Statistician, Business Analyst
- Operations Research
- Scientific Computing
- Financial Mathematics



## **Applied Statistics**

High demand in the era of big data.

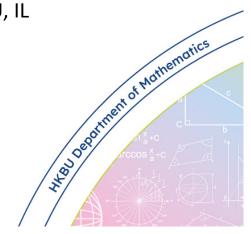
- MATH2206 Probability & Statistics
- MATH2216 Statistical Methods and Theory
- MATH3805 Regression Analysis
- MATH3806 Multivariate Statistical Methods
- MATH3815 Statistical Design and Analysis of Experiments
- MATH3816 Statistical Analysis of Sample Surveys
- MATH4807 Categorical Data Analysis
- MATH4826 Time Series and Forecasting



## **Dr Wenqian Wang**

- BSc (Hons) Stats, 2014
- PhD, Northwestern U, IL

Data Analyst LinkedIn



## **Operations Research**

Promising future in the commercial enterprises.

- MATH2225 Calculus II
- MATH1005 Calculus I
- MATH2205 Multivariate Calculus
- MATH3817 Operations Research I
- MATH3826 Operations Research II •
- MATH3807 Simulation .
- MATH4816 Optimization Theory and Techniques.
- MATH4826 Time Series and Forecasting



### **Ms Slyvia GENG**

- BSc (Hons) Stats, 2011
- MSc, Rutgers U, NJ

www.pegorment.or.Mathematics **Operations Research Analyst** Amazon, Seattle

# Scientific Computing

High demand in the Innovation and Technology sector of the "Smart Economy".

- MATH2207 Linear Algebra I
- MATH2215 Mathematical Analysis
- MATH3405 Differential Equations I
- MATH3206 Scientific Computing I
- MATH3407 Linear Algebra II
- MATH3616 Scientific Computing II
- MATH3606 Differential Equations II
- MATH4615 Numerical Linear Algebra



## **Dr Charles Cheung**

- BSc (Hons) Math, 2011
- PhD, HKBU

whou Deportment of Morthermortics **Deep Learning Solutions Architect NVIDIA** 

## **Financial Mathematics**

Promising future in the finance sector.

- MATH1005 Calculus I
- MATH2225 Calculus II
- MATH2205 Multivariate Calculus
- MATH2206 Probability & Statistics
- MATH3845 Interest Theory and Applications
- MATH4207 Computational Finance
- MATH4216 Mathematical Finance ٠
- MATH4837 Risk and Portfolio Management ٠



## **Mr Alex Chan**

- BSc (Hons) Stats, 2014
- MSc, Imperial, UK

HOUDEROF Ment of Mothemotics Premier Relationship Manager **HSBC** 

## **Data Science**

One of the booming fields in the 21st century!

- MATH1005 Calculus I .
- MATH2225 Calculus II ۲
- MATH2205 Multivariate Calculus ۲
- MATH2206 Probability & Statistics
- MATH3836 Data Mining
- MATH4225 Foundation of Big Data and Learning •
- MATH4226 Introduction to Deep Learning •
- MATH4807 Categorical Data Analysis •

# NG DATA SCIENCE WOF

- There are countless job opportunities
- The salary ceiling is high
- wou Department of Mothemotics The demand is constantly growing

	Data Scientist #6 in 100 Best Jobs Data scientists use technology to glean insights from large amounts of data they collect. READ MORE »	PROJECTED JOBS 19,800 MEDIAN SALARY \$98,230 (HK\$64,000/month) EDUCATION NEEDED Bachelor's
	Financial Manager #7 in 100 Best Jobs If financial managers were doctors, the financial success of their organization would be a testimony to their treatment. These business professionals create financial reports, coordinate investment activity and develop long-term financial strategies for companies. READ MORE »	PROJECTED JOBS 118,200 MEDIAN SALARY \$134,180 (HK\$87,000/month) EDUCATION NEEDED Bachelor's
	Statistician         #8 in 100 Best Jobs         Statistics is the science of using data to make decisions. This is relevant in almost all fields of work and there are many opportunities for employment. READ MORE »	PROJECTED JOBS 14,900 MEDIAN SALARY \$92,270 (HK\$59,000/month) EDUCATION NEEDED Master's



### Market Research Analyst

### 🥖 #14 in 100 Best Jobs

Knowing what customers want is essential in running a business, and market research analysts help companies do just that. Typical responsibilities include monitoring and forecasting marketing and sales trends, measuring the effectiveness of marketing programs and strategies, gathering and analyzing data, and preparing and presenting reports to both clients and management. **READ MORE** » PROJECTED JOBS 163,600

median salary **\$65,810** (HK\$42,000/month)

EDUCATION NEEDED Bachelor's



## **Operations Research Analyst**

### *in 100 Best Jobs #15 in 100 Best Jobs*

From data mining to mathematical modeling, operations research analysts use advanced techniques to help businesses run in a more efficient and cost-effective manner. **READ MORE** »

PROJECTED JOBS 25,600

MEDIAN SALARY **\$86,200** (HK\$56,000/month)

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EDUCATION NEEDED Bachelor's

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- Retrieved in December 2022
- https://money.usnews.com/careers/best-jobs/rankings

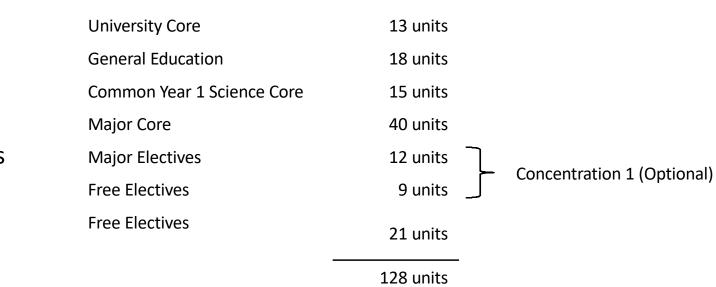




- **US** (Harvard, Yale, Brown, Columbia, Chicago, Johns Hopkins, Michigan, NYU)
- Canada (UT, UBC, Waterloo)
- UK (Oxford, Imperial, LSE, King's College, Edinburgh)
- France (École Polytechnique)
- Netherlands (Leiden, Tillburg)
- Sweden (Lund)
- Australia (ANU, Melbourne), Singapore (NUS)
- HK (HKU, CUHK, HKUST).



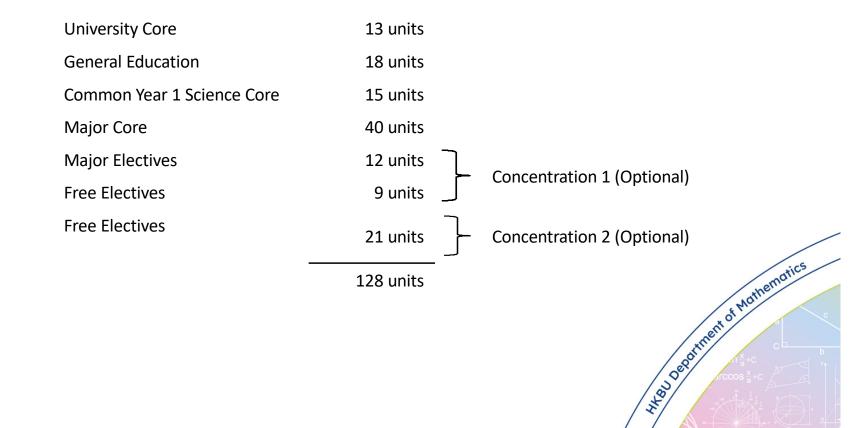
# Concentrations



whou Deportment of Mathematics

- Data Science
- Applied Statistics

# Concentrations



- Data Science
- Applied Statistics

### Data Science (total 7 courses)

<u>Group A: All of:</u> MATH3836 Data Mining MATH4225 Foundation of Big Data and Learning

<u>Group B: At least 6 units from:\*\*</u> MATH4226 Introduction to Deep Learning MATH4227 Programming for Data Science MATH4815 Interior Point Methods for Convex Optimization MATH4816 Optimization Theory and Techniques

Group C: At least 3 units from:\*\* MATH3427 Real Analysis MATH3605 Numerical Methods II MATH3615 Introduction to Imaging Science MATH3626 Computational Statistics for Data Science MATH3826 Operations Research II MATH4615 Numerical Linear Algebra MATH4807 Categorical Data Analysis MATH4826 Time Series and Forecasting MATH4875, 4876, 4877 Special Topics in Statistics I, II, III



### Applied Statistics (retitled from Quantitative Data Analysis) (choose any 7 courses)

MATH3416 Complex Analysis MATH3427 Real Analysis MATH3605 Numerical Methods II MATH3626 Computational Statistics for Data Science MATH3815 Statistical Design and Analysis of Experiments MATH3816 Statistical Analysis of Sample Surveys MATH3826 Operations Research II MATH3836 Data Mining MATH4205 Topics in Probability Theory and Stochastic Processes MATH4615 Numerical Linear Algebra MATH4805 Applied Nonparametric Statistics MATH4807 Categorical Data Analysis MATH4817 Stochastic Models MATH4825 Survival Analysis MATH4826 Time Series and Forecasting MATH4875, 4876, 4877 Special Topics in Statistics I, II, III







Academic advisors can help you with:

✓ Course selection

Academic Advisors

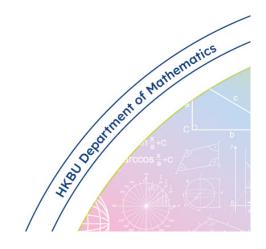
✓ Matters concerning policies & academic regulations

✓ Plans for exchange study

✓ Plans for postgraduate study

✓ Job search

✓ Follow-up referrals



## Café Mathématique

- A series of informal events connecting you to:
  - Alumni
  - Professors
  - Other current students
  - Community
- Snacks, beverages and plenty of interactions!



## Exchange Programme

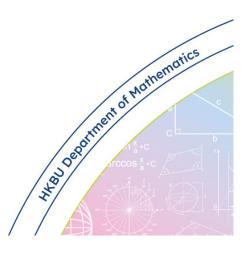
- 200+ universities in 34 countries to choose from
- Application through International Office
  - We suggest going abroad in year 3 semester 2
  - Apply before November of year 2
- Our role: help you design your program abroad and make sure you can transfer credits back.
- With proper planning, you can still graduate ON TIME after going on exchange!





# Internship

- Job Practicum I, II, III (MATH 3495, 3496, 3497) (each 1 credit)
- Grade: **S** for satisfactory and **U** for unsatisfactory
- Target: Years 2 or 3 students
- Period: June to August every year
  - 1 unit: >120 hours, 2 units: >240 hours, 3 units: >360 hours
  - Based on department's decision and mutual agreements.
- Industrial partners:
  - Hong Kong, mainland China, or overseas.
  - Every year we receive requests from companies or organizations.
  - You may also suggest some suitable companies.





## Summer Undergrad Research Fellowship (SURF)

- Supports undergraduate students to conduct frontier research in summer, with HKBU or overseas faculty.
- A lump sum up to HK\$8,000 to each awardee for around two months of research. The amount of stipend will depend on the merits of the research proposal.
- Timeline:
  - Anytime: contact faculty members about possible projects, or any topics that you are interested in
  - November-January: application time (check your emails)
  - March-May: notification of results
  - June-August: carry out research project

