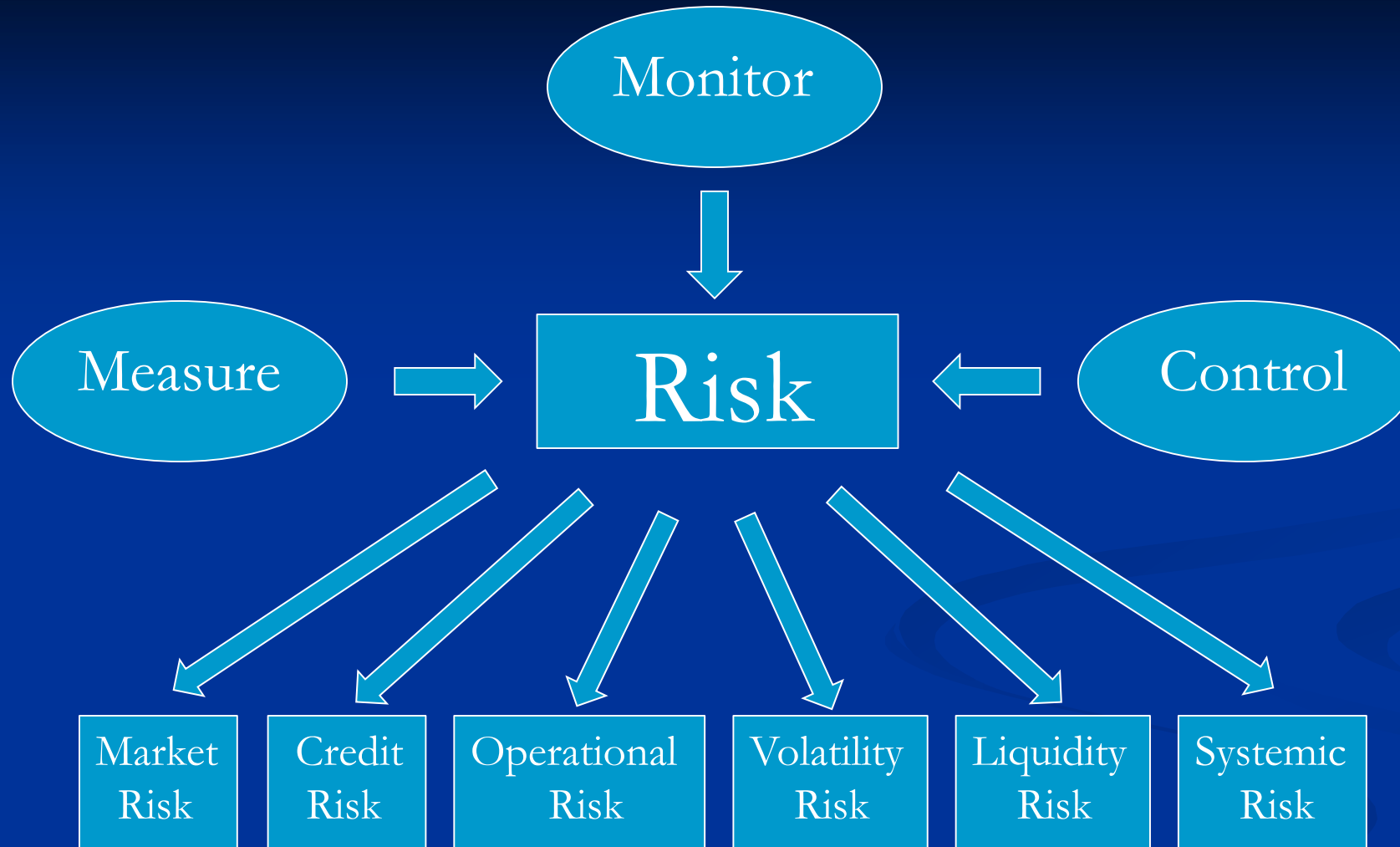


# Bachelor of Science

*(4-year Curriculum)*

Major in Risk Management

Minor in Actuarial Studies

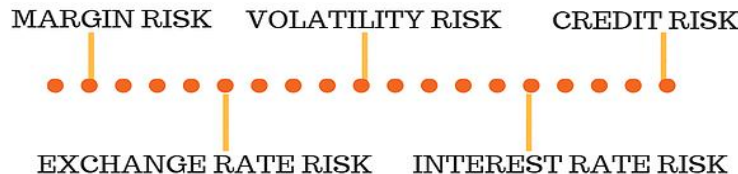


*Life is full of risks, and the risks are costly!*

# Examples of Applications



# Examples of Applications



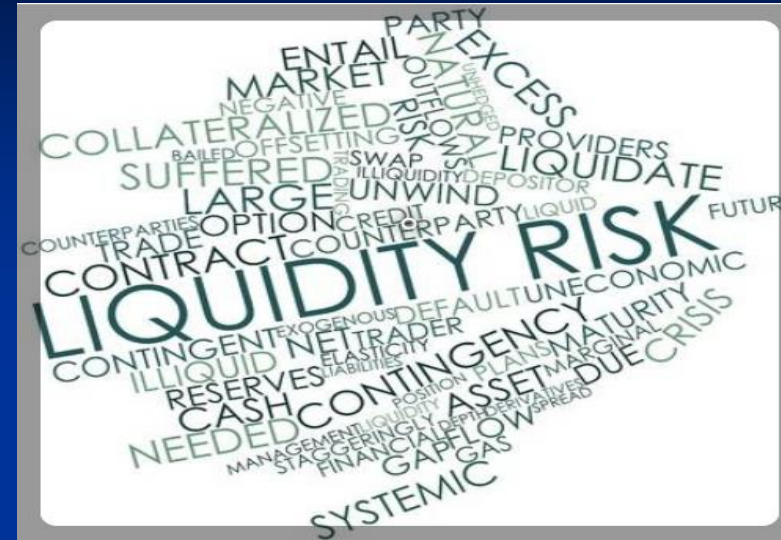
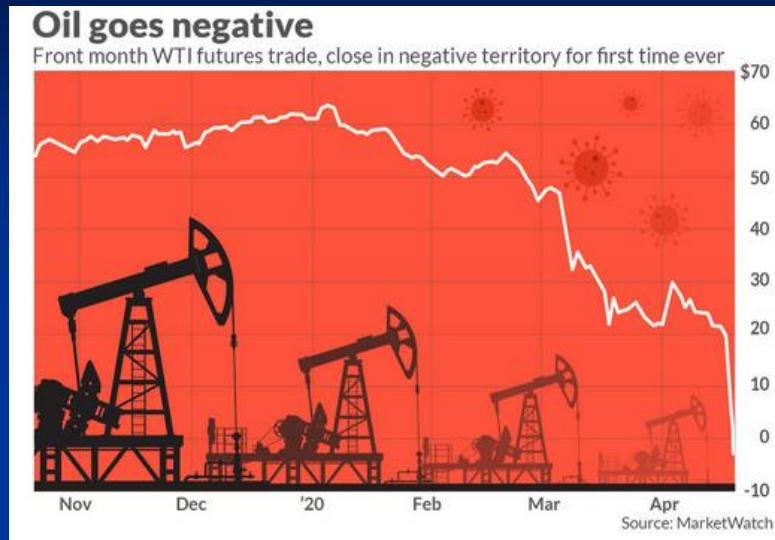
GARCH  
MODELS



REALIZED  
VOLATILITY

Implied Volatility

# Examples of Applications



- **A day trader who bought hundreds of oil futures contracts during its historic price crash last month was told he owed \$9 million after a technology issue prevented his trading platform from displaying negative oil prices, Bloomberg reported on Friday.**


# Examples of Applications

IMPOSSIBLE TO DETERMINE IF  
A STOCK IS UNDERVALUED  
OR OVERVALUED!

**Efficient Market Hypothesis**

Impossible to "beat" the market  
because all current and relevant  
information is already reflected  
into the share price.

THE CURRENT PRICE IS THE RIGHT PRICE!



The illustration features several elements: a red circle containing a stack of papers, a newspaper labeled 'NEWS', and a line graph; a stack of green dollar bills; and a grey bomb-like shape labeled 'RISK' hanging from a hook.

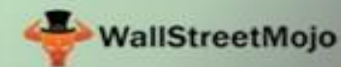
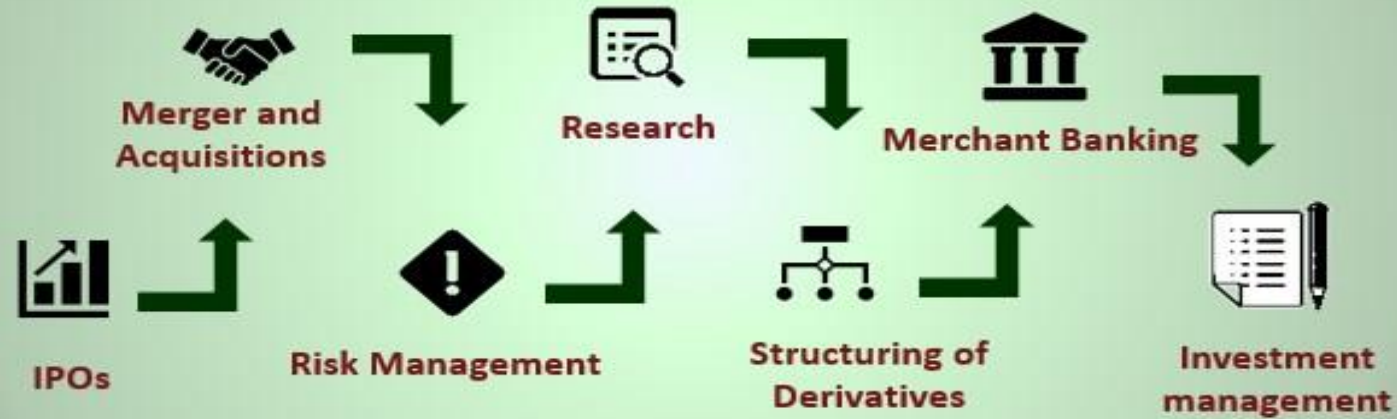
Q: Can the stock price be predicted?

A: It is predicted only when the market is not efficient.

----- by E. Fama (Nobel Laureate in Economics 2013)

# Examples of Applications

## Investment Banking Functions



Capital Asset Pricing Model Formula

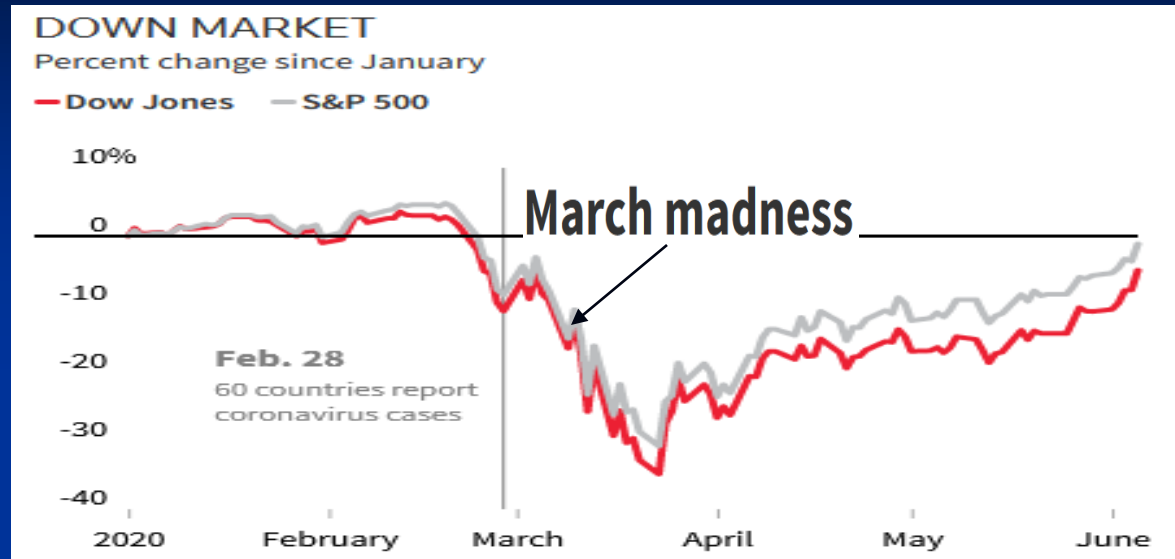
$$R_a = R_{rf} + B_a (R_m - R_{rf})$$

# Examples of Applications

Q: What happened if the stock market fused four times in a single month?

**Crazy  
but  
true!**

A: Stress testing by using scenario analysis.





# What do we need from your Mathematics?

- Set notation and theory
- Functions (*incl.* limits, continuity)
- Sequences, series
- Basic calculus (*incl.* partial differentiation, double integration)
- Vectors, matrices (basic operations)

# Mathematical background adequate?

- Students must have level 2 or above in HKDSE Extended Module 1 or 2 of Mathematics  
or equivalent
- Otherwise, strongly advised to take **MATH1011 University Mathematics I** in Semester 1.

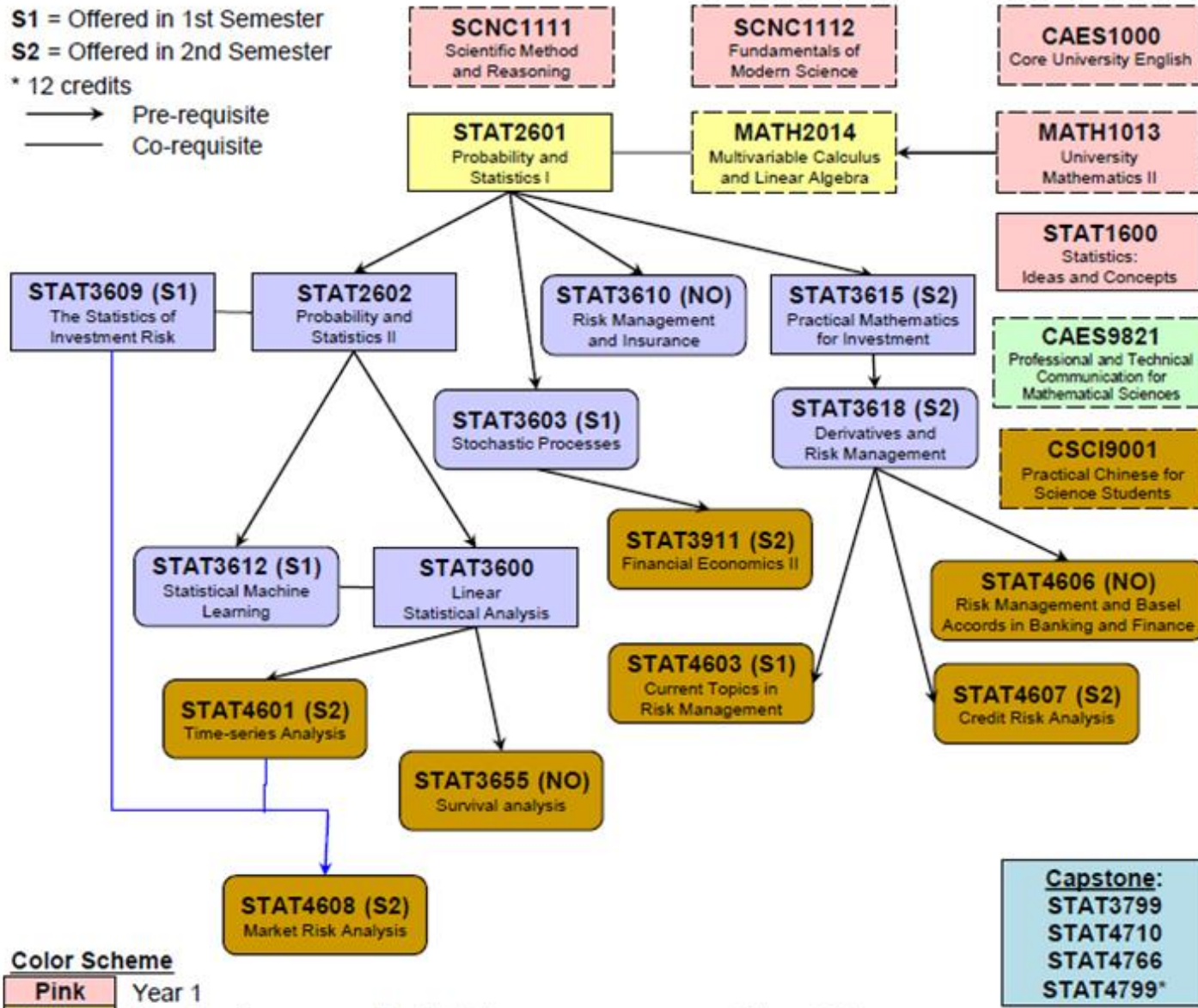
## Suggested / Example Structure of BSc (Major in Risk Management) Curriculum

Year	One		Two	
Semester	One	Two	One	Two
<b>Disciplinary Core</b>	MATH1013 University Mathematics II  STAT1600 Statistics: Ideas and Concepts	MATH2014 Multivariable Calculus and Linear Algebra	STAT2601 Probability and Statistics I	STAT2602 Probability and Statistics II  STAT3615 Practical Mathematics for Investment
<b>Science Foundation Courses</b>	SCNC1111 Scientific Method and Reasoning	SCNC1112 Fundamentals of Modern Science		
<b>Common Core</b>	Six common core courses within the first three years			
<b>Language</b>	CAES1000 Core University English (offered in both semesters)		CAES9821 Professional and Technical Communication for Mathematical Sciences (offered in both semesters)	

# Flow Chart of Disciplinary Courses for BSc Major in Risk Management

S1 = Offered in 1st Semester  
 S2 = Offered in 2nd Semester  
 \* 12 credits

→ Pre-requisite  
 — Co-requisite



## Color Scheme

Pink	Year 1
Yellow	Year 1 or 2
Green	Year 2
Purple	Year 2 or 3
Brown	Year 3 or above

## Border Scheme

Solid	Offered by SAAS
Dashed	Other Departments

## Shape Scheme

Rectangle	Core
Rounded	Elective

# Major in Risk Management vs Major in Statistics

- All 7 introductory level courses SAME
- Advanced level core courses:  
1 SAME, 3 DIFFERENT
- **Risk Management** –  
courses focus primarily on business-related topics: e.g.  
*investment, insurance, finance, banking, etc.*
- **Statistics** –  
courses cover wide range of topics with emphasis on  
*“METHODS”, their applications, and underlying theory.*
- Students **CANNOT** double major or major/minor in  
**Risk Management & Statistics**
- For detailed curriculum structure, please refer to  
<https://webapp.science.hku.hk/sr4/servlet/enquiry?frmId=MenuP>

# Reminder

- plan ahead
- watch out for pre-requisites of individual courses
- courses **CANNOT** be double-counted to fulfill different majors/minors

*(exception for double major in Science:*

**SCNC1111 & SCNC1112 & up to 12 credits of compulsory courses**

*REQUIRED by both Science majors can be double-counted)*

- consult course selection advisors if necessary

# FRM Exam (Financial Risk Management Certification)

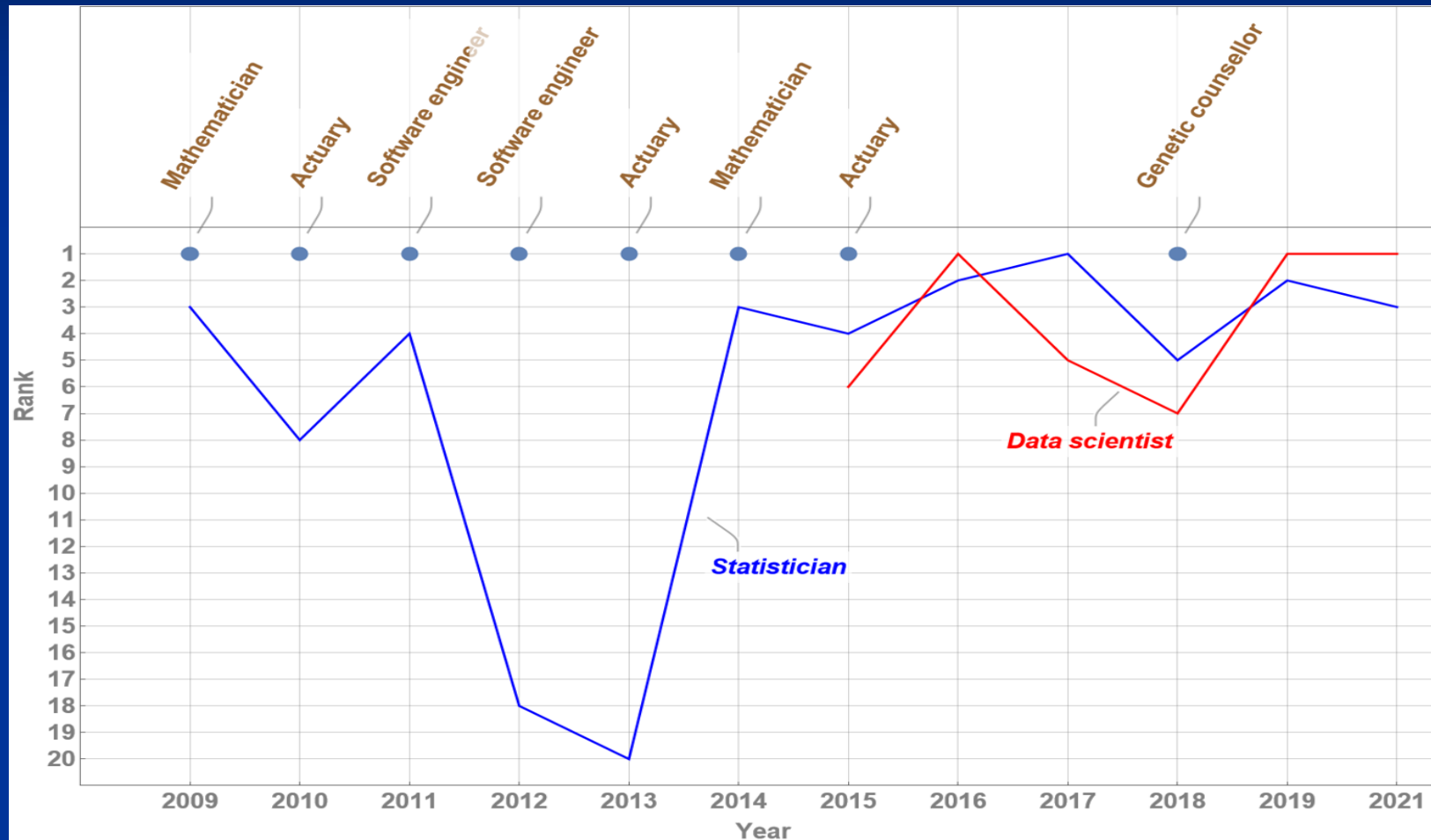


# PRM (Professional Risk Manager)



[www.educba.com](http://www.educba.com)

<https://www.careercast.com/jobs-rated/best-jobs-2021>





# Support from University and Department

- **HKU** : Centre of Development and Resources for Students
  - NETmatch, NETjobs, JIIS (Joint Institutions Job Info. System)
- **Department** : Internship / Job Online Application System

The screenshot shows a web browser window with the URL <https://apps.saas.hku.hk/internship/index.php>. The page header includes the Department of Statistics & Actuarial Science logo and a group photo of students. The main content area displays user profile information:

- UID: 2008000001
- Name: Ugrad Test\_Student1
- Last Status: Available working period: From: 2019-04-10 To: 2019-11-30
- Major: Statistics
- E-mail: @hku.hk
- Contact Phone: +852 12345678
- CAP Profile: (Cover letter & CV) [Upload Profile]
- PPP Score: Letter & CV Submitted: 0.0, Mock Interview: 0.0, Case Analysis & Presentation: 0.0

Navigation tabs include: [Current Job List](#), [Application History](#), and [Past Internship/Jobs](#).

Records shown 1 - 16 of 16

Jobtype	Company Name	Job Title / Job Description / Form	Closing date	Action
Full-time_ST&AS	EFA	Portfolio Investment Analyst(ASAP) (GRAD/Internship) IR 1452	2019-08-11	Submit completed application via email at <a href="mailto:careers@efadrin.com">careers@efadrin.com</a>
Internship_AS&ST	AIA Group	Actuarial Internship Programme (Jan-Jun 2020) AW 1526	2019-08-31	Submit completed application via email at <a href="mailto:Rachel.yh.chan@aia.com">Rachel.yh.chan@aia.com</a>
Internship_AS&ST	Blue, trade name of Aviva Life Insurance Co Ltd	Actuarial Intern / Jan-Jun 2020) MY 1529	2019-08-31	Submit completed application via email at <a href="mailto:careers@blue.com.hk">careers@blue.com.hk</a>
Full-time_AS&ST	CIGNA	Contract Associate - Valuation (IFRS) (ASAP) JC 1629	2019-08-25	Submit completed application via email at <a href="mailto:sandy.lau@cigna.com">sandy.lau@cigna.com</a>
Full-time_AS&ST	YF Life Insurance International Ltd	Actuarial Analyst (GRAD/ASAP) VL 1643	2019-08-18	Submit completed application via email at <a href="mailto:recruit@yflife.com">recruit@yflife.com</a>

Contact person:

Dr. Eric LI

<[internship-job@saas.hku.hk](mailto:internship-job@saas.hku.hk)>

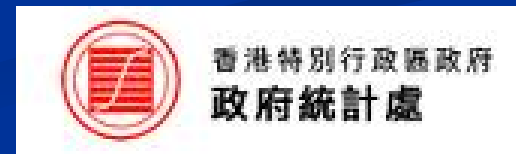
# Career Development Training

## ■ Summer IT course:

- Essential IT skills (certificate course)

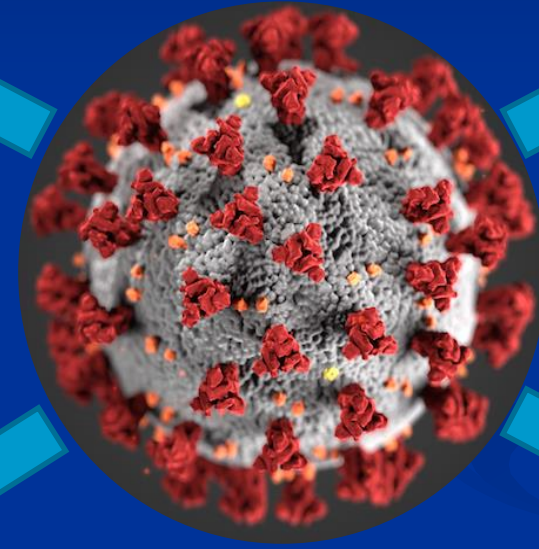
## ■ Career Advising Programme (CAP) to prepare students for:

- internships and job opportunities
- advancing resume and interview skills



# Minor in Actuarial Studies

Disciplinary Elective			
Introductory		Advanced	
MATH1013	FINA1310	STAT3612	STAT3615
STAT2601	STAT2602	STAT3901	STAT3904
STAT2604		STAT3906	STAT3908
		STAT3910	STAT3911
		STAT3953	STAT4903



# Contact Persons

- Co-ordinator & Course Selection Adviser
  - Dr. K.P. WAT
- Credit Transfer
  - Dr. Chen WANG
- Tel: 3917 2466
- Email: [ug\\_enquiry@saas.hku.hk](mailto:ug_enquiry@saas.hku.hk)