

Bachelor of Science

(4-year Curriculum)

Major in Risk Management

Minor in Actuarial Studies

What is Risk Management?

- **Risk Management** is a logical and systematic methodology of studying the risks involved in any activity or process.



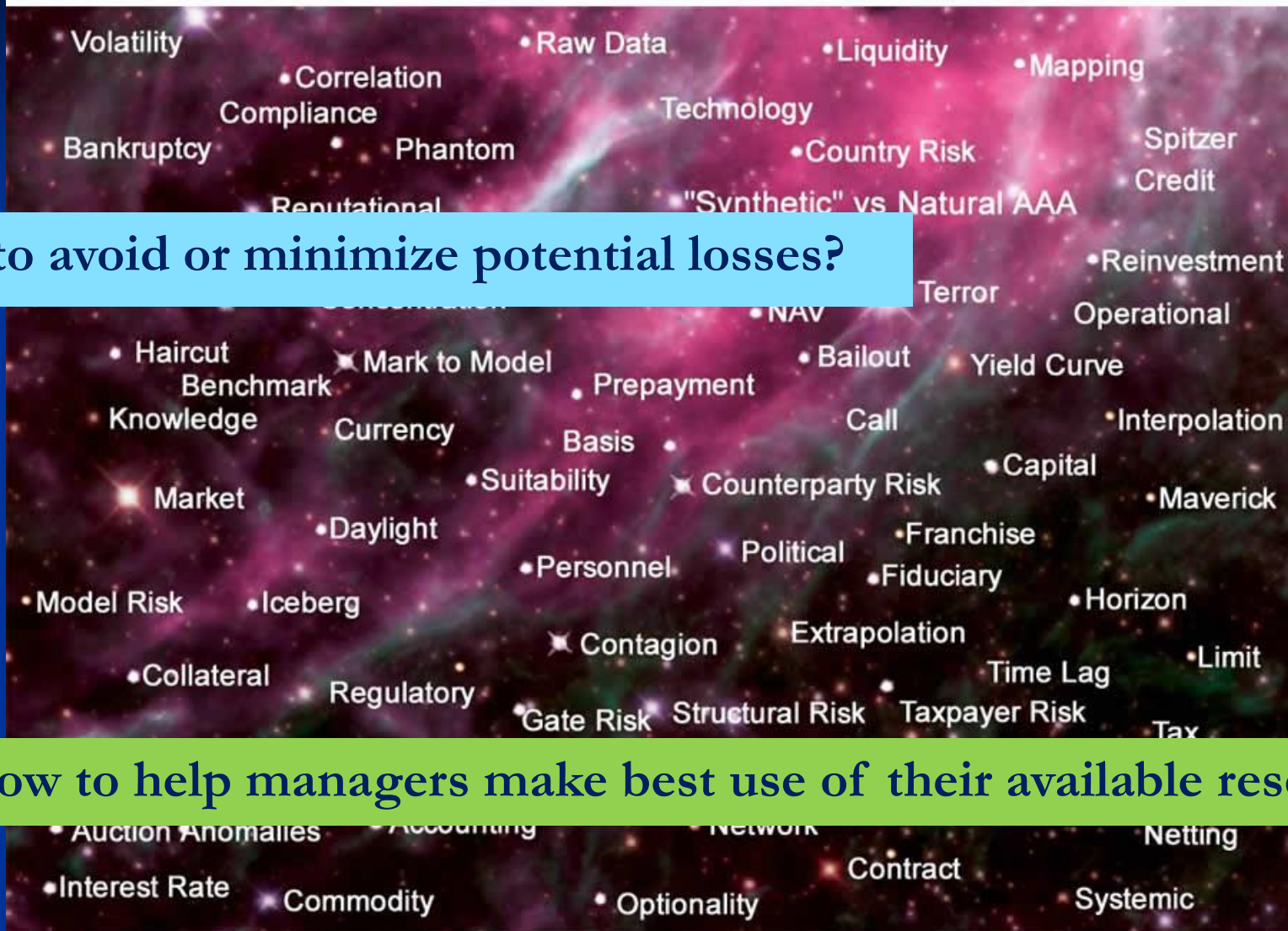
Identifying
risk

Analyzing
risk

Treating
risk

Monitoring
risk

Galaxy of Risks



How to avoid or minimize potential losses?

How to help managers make best use of their available resources?

■ Risk Management practices are widely used in public and the private sectors. Examples are:

- Finance and Investment
- Insurance
- Health Care
- Natural Hazards
- Governments



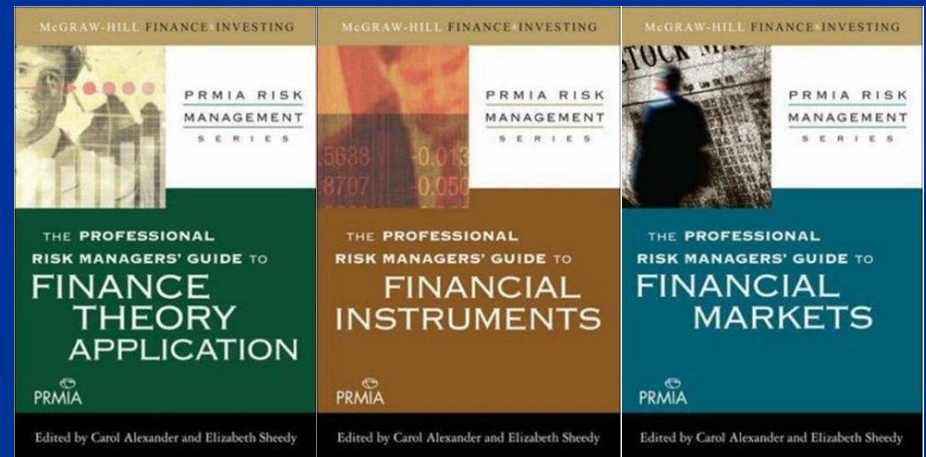
Risk Management - Interdisciplinary

- An all-rounded risk manager should have a **combined skill** that includes concepts and techniques from many fields:
 - **Statistics and financial econometrics**
 - **Actuarial modeling**
 - **Mathematical finance**
 - **Other skills: communication skill and computer programming skill**



Professional Qualification

- **Financial Risk Manager (FRM) Certificate Exam**
 - awarded by Global Association of Risk Professionals (GARP)
<https://www.garp.com> (founded in 1996)
- **Professional Risk Managers (PRM) Exam**
 - awarded by Professional Risk Managers' International Association (PRMIA) <https://www.prmia.org>
- **Chartered Enterprise Risk Actuary (CERA)** 
 - awarded by CERA Global Association <https://ceraglobal.org>



7 introductory level courses (42 credits)

- SCNC1111 Scientific method & reasoning
 - SCNC1112 Fundamentals of modern science
 - *MATH1013 University mathematics II
 - *MATH2014 Multivariable calculus & linear algebra
 - *STAT1600 **Statistics: ideas & concepts**
 - *STAT2601 **Probability and statistics I**
 - *STAT2602 **Probability and statistics II**
- * replaced by other advanced level STAT course(s) if above course(s) already taken to fulfill other majors/minors***

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.

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)

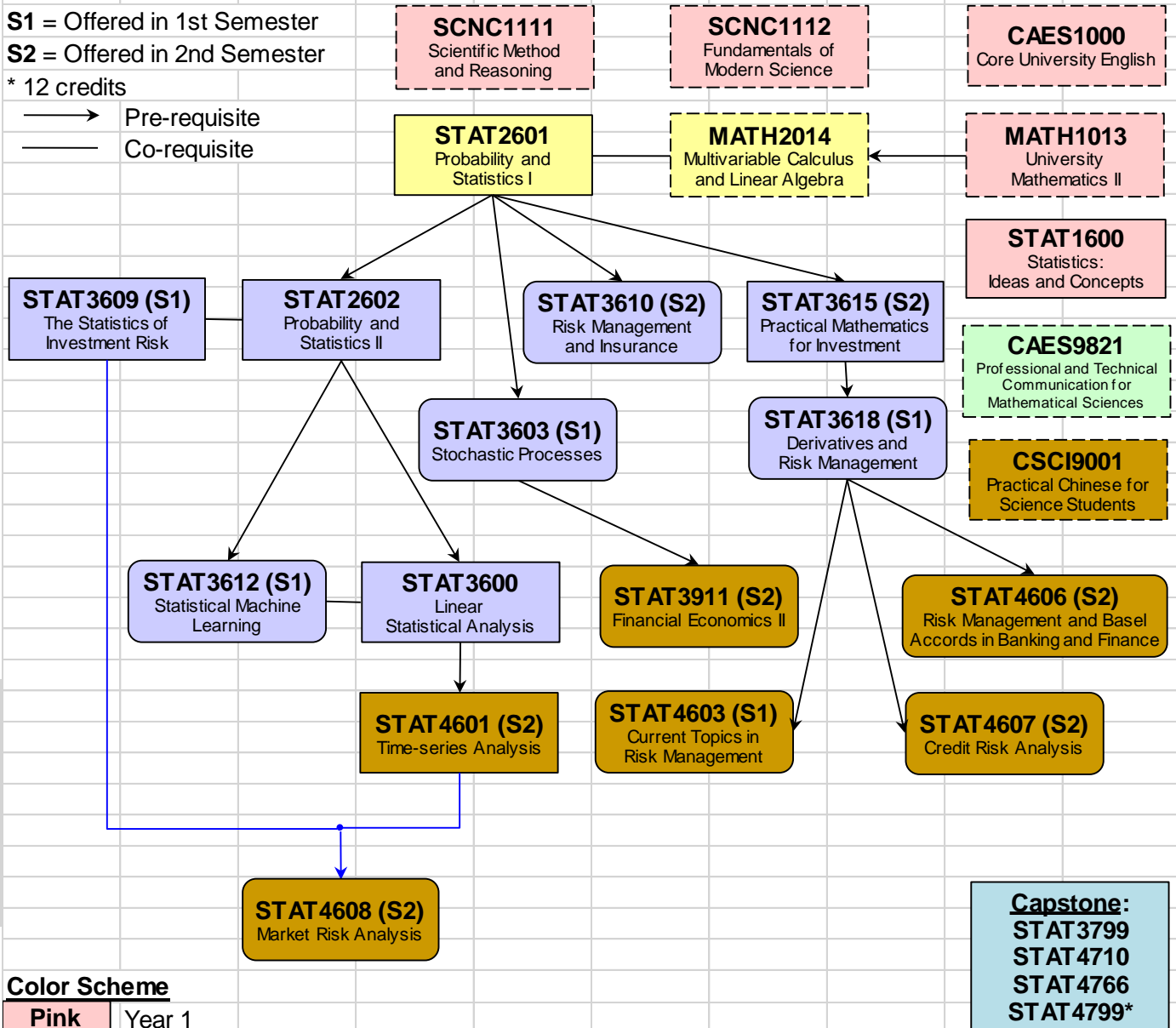
Suggested / Example Structure of BSc (Major in Risk Management) Curriculum

Year	One		Two	
Semester	One	Two	One	Two
Disciplinary Core	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
Science Foundation Courses	SCNC1111 Scientific Method and Reasoning	SCNC1112 Fundamentals of Modern Science		
Common Core	Six common core courses within the first three years			
Language	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



Border Scheme

Solid	Offered by SAAS
Dashed	Other Departments

Shape Scheme

Rectangle	Core
Rounded	Elective

Color Scheme

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

Capstone:
 STAT3799
 STAT4710
 STAT4766
 STAT4799*

4 Core advanced level courses (24 credits)

** STAT3600	Linear statistical analysis
* STAT4601	Time-series analysis
STAT3609	The statistics of investment risk
STAT3615	Practical mathematics for investment

**** also core to Decision Analytics / Statistics Major**

*** also core to Statistics Major**

Other advanced level courses (24 credits)

■ Four courses to be selected from...

- STAT3603 Stochastic processes
- STAT3612 Statistical machine learning
- STAT3911 Financial economics II
- STAT4607 Credit risk analysis
- STAT4608 Market risk analysis

more statistically-oriented

less statistically-oriented

- STAT3610 Risk management & insurance
- STAT3618 Derivatives & risk management
- STAT4603 Current topics in risk management
- STAT4606 Risk management & Basel Accords in banking and finance

Capstone requirement (6 credits)

At least 6 credits from:

individual project

- STAT3799 Directed studies in statistics (6 credits)
- STAT4799 Statistics project (12 credits)

- STAT4710 Capstone experience for statistics undergraduates (6 credits)

- STAT4766 Statistics internship (6 credits)

group project

Major in Risk Management vs Major in Statistics

- All 7 introductory level courses SAME
- Advanced level core courses:
2 SAME, 2 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

Minor in Actuarial Studies (42 credits)

- Introductory level courses (12 credits)

2 courses from...

- FINA1310 Corporate finance
- MATH1013 University mathematics II
- STAT2601 Probability and statistics I
- STAT2602 Probability and statistics II
- STAT2605 Demographic and socio-economic statistics
- STAT2901 Probability and statistics:
foundations of actuarial science

Minor in Actuarial Studies

- Advanced level courses (30 credits)

5 courses from...

- STAT3615 Practical mathematics for investment
- STAT3901 Life contingencies
- STAT3904 Corporate finance for actuarial science
- STAT3906 Risk theory I
- STAT3908 Credibility theory and loss distributions
- STAT3910 Financial economics I
- STAT3911 Financial economics II
- STAT4903 Actuarial techniques for general insurance

A new introductory-level course

■ **STAT2604**

Introduction to R programming and elementary data analysis

- introduction to statistical programming language R
- basic programming skills in R with examples and applications in elementary statistical analysis
- management of different data types: input/output, manipulation, transformation
- random sampling, descriptive data analysis
- production of professional summary reports with high-quality graphs

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

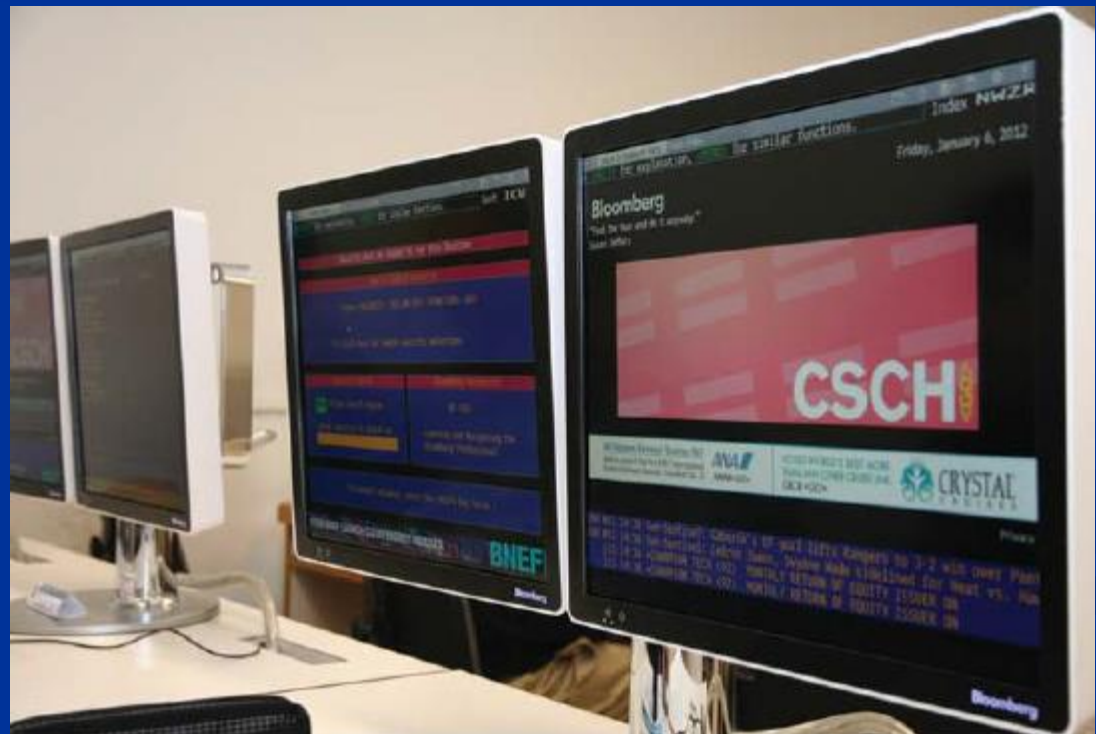
Contact Persons

- Co-ordinator
 - Ke Zhu
- Course Selection Advisors
 - C W Kwan
 - Stephen M S Lee
 - K Zhu
- Tel: 3917 2466
- Email: ug_enquiry@saas.hku.hk

Support from University and Department

■ Department : Computing facilities

- two statistical computer laboratories
- up-to-date software for teaching, learning, research



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 features the Department of Statistics & Actuarial Science logo and a group photo of students. The main content area displays user profile information and application history.

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

Application History:

Company Name	Job Title / Job Description / Form	Closing date	Action
EFA	Portfolio Investment Analyst(ASAP) (GRAD/Internship) IR 1452	2019-08-11	Submit completed application via email at careers@efadrin.com
AIA Group	Actuarial Internship Programme (Jan-Jun 2020) AW 1526	2019-08-31	Submit completed application via email at Rachel-yh.chan@aia.com
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 careers@blue.com.hk
CIGNA	Contract Associate Valuation (IFRS) (ASAP) JC 1629	2019-08-25	Submit completed application via email at sandy.lau@cigna.com
Full-time_AS&ST	YF Life Insurance International Ltd Actuarial Analyst (GRAD/ASAP) VL 1643	2019-08-18	Submit completed application via email at recruit@yflife.com

Contact person:
Dr C W Kwan
<cwkwan@hku.hk>

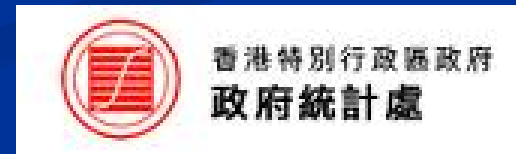
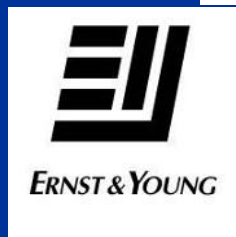
Career Development Training

■ 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



Exchange study

Faculty of Science
Course Equivalence Database
(for credit transfer reference):

Contact person:
Dr ZHU Ke
<mazhuke@hku.hk>

https://webapp.science.hku.hk/student/servlet/course_equiv

COURSE EQUIVALENCE DATABASE

University

19. Canada - University of Waterloo

Canada - University of Waterloo

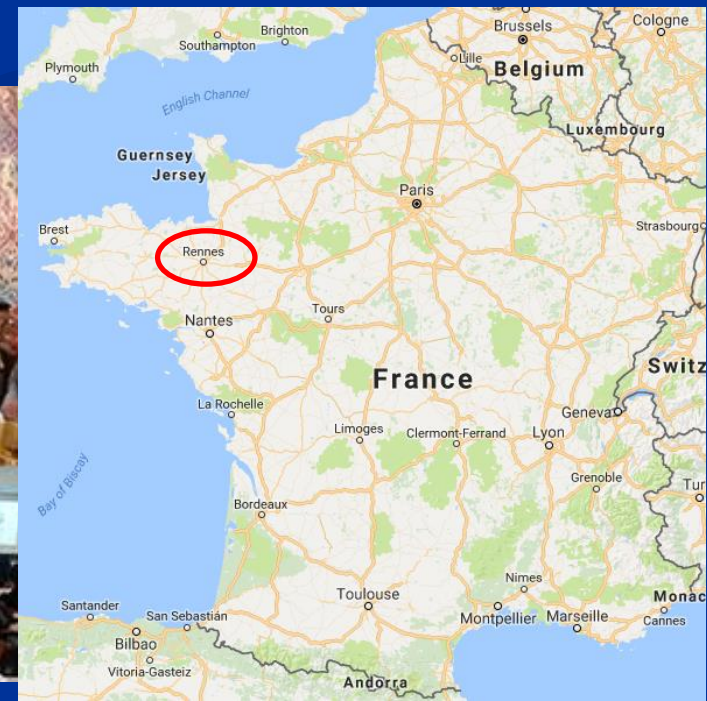
No.	Partner Code	Partner Credit/Unit	Partner Title	HKU Code	HKU Credit	HKU Title
1.	ACTSC 231	0.5	Introductory Financial Mathematics	STAT3615	6	Practical mathematics for investment
2.	ACTSC 331	0.5	Life Contingencies 2	STAT3909	6	Advanced life contingencies
3.	ACTSC 371	0.5	Introduction to Investments	STAT3609	6	The statistics of investment risk
4.	ACTSC 372	0.5	Corporate Finance	STAT3904	6	Corporate finance for actuarial science
5.	ACTSC 432	0.5	Loss Models 2	STAT3908	6	Credibility theory and loss distributions
6.	ACTSC 433	0.5	Analysis of Survival Data	STAT3955	6	Survival analysis
7.	ACTSC 445	0.5	Quantitative Enterprise Risk Management	STAT4608	6	Market risk analysis
8.	ACTSC 446	0.5	Mathematical Models in Finance	STAT3911	6	Financial economics II
9.	ACTSC 453	0.5	Basic Pension Mathematics	STAT3956	6	Pension funds and pension mathematics
10.	ACTSC 462	0.5	Introduction to Property and Casualty Pricing	STAT3954	6	Current topics in actuarial science
11.	ACTSC 463	0.5	Introduction to Property and Casualty Loss Reserving	STAT4903	6	Actuarial techniques for general insurance

Scholarships

- Available to students majoring in *Risk Management / Statistics / Decision Analytics* based on academic performance and/or other qualities

ENSAI

- ☺ Faculty-sponsored 2-week overseas study exchange tour to France
- ☺ National School for Statistics and Data Analysis
 - Rennes, France
- ☺ Ecole nationale de la statistique et de l'analyse de l'information (ENSAI in French)



Student Peer Advisers in 2019-20

- General roles
 - to **offer advice** in relation to academic studies to freshmen; and
 - to **facilitate** freshmen's **smooth transition** from secondary to university education
- Matching between **Student Peer Advisers (SPAs)** and freshmen starting from 2019-20
- You are highly encouraged to contact the following SPAs if you have any questions about your study (their contacts can be found at the Faculty's website)
 - Miss DING Zhui (Rose) (BSc Year 2)
 - Mr JUSUF Joshuandy (BSc Year 3)
 - Miss MARVELLA Jennifer (BSc Year 3)
 - Mr WONG Ka Wai (Spring) (BSc Year 4)



Q & A