Bachelor of Science

(4-year Curriculum)

Major in Risk Management

Minor in Actuarial Studies

What is Risk Management?

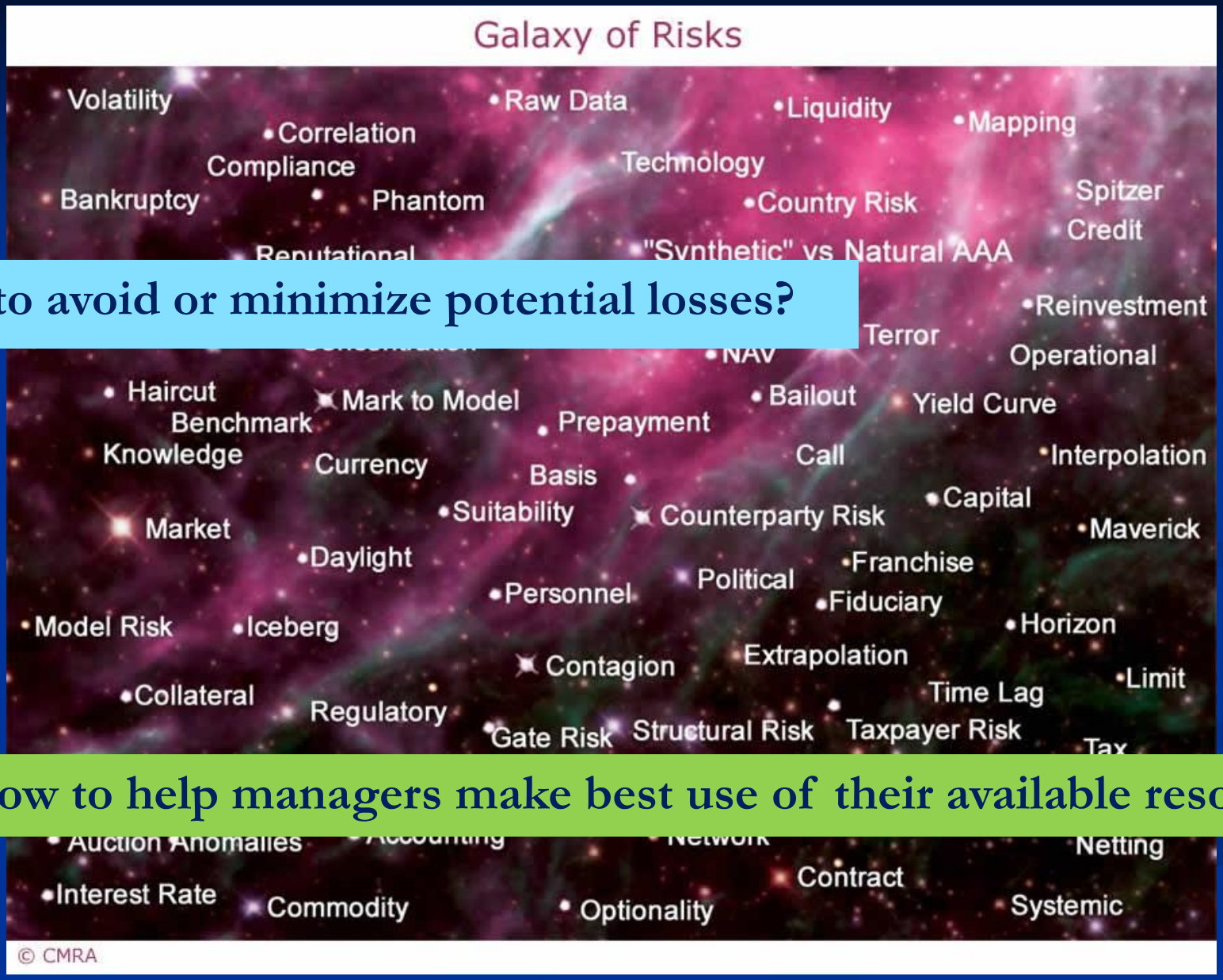
- **Risk Management** is a logical and systematic methodology of studying the risks involved in any activity or process.

Identifying risk

Analyzing risk

Treating risk

Monitoring risk


Galaxy of Risks
Volatility
Raw Data
Liquidity
Mapping
Correlation
Compliance
Technology
Bankruptcy
Phantom
Country Risk
Spitzer
Credit
"Synthetic" vs Natural AAA
How to avoid or minimize potential losses?
Reinvestment
Terror
NAV
Operational
Haircut
Mark to Model
Bailout
Yield Curve
Benchmark
Prepayment
Knowledge
Currency
Call
Interpolation
Basis
Capital
Suitability
Counterparty Risk
Market
Maverick
Daylight
Franchise
Political
Personnel
Fiduciary
Model Risk
Iceberg
Horizon
Contagion
Extrapolation
Limit
Collateral
Time Lag
Regulatory
Gate Risk
Structural Risk
Taxpayer Risk
Tax
How to help managers make best use of their available resources?
Auction Anomalies
Netting
Contract
Interest Rate
Commodity
Optionality
Systemic
© CMRA

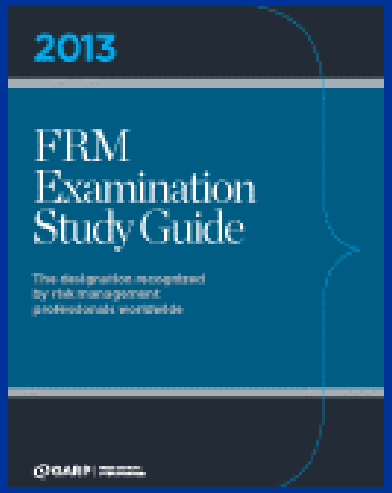
- Risk Management practices are widely used in public and the private sectors. Examples are:
  - Finance and Investment
  - Insurance
  - Health Care
  - Natural Hazards
  - Governments

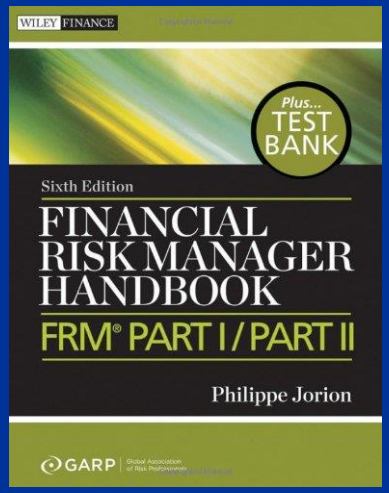
Risk Management - Interdisciplinary

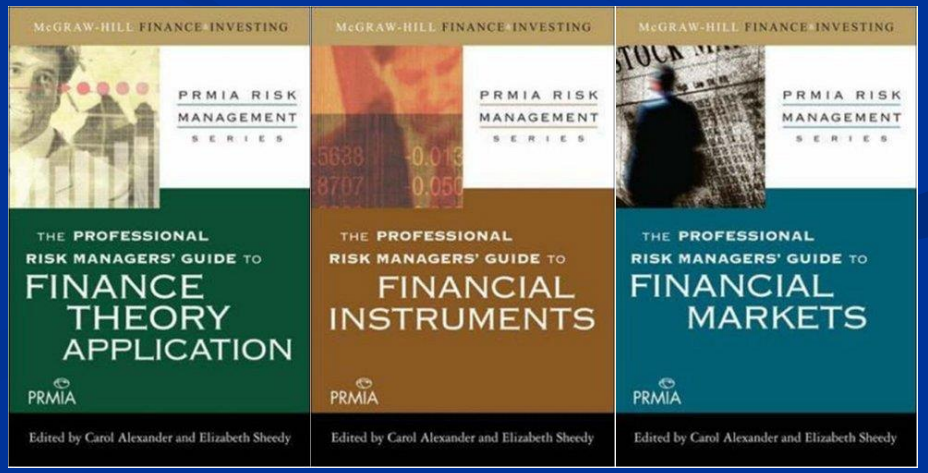
- An all-rounded risk manager should have a combined skill that includes concepts and techniques from many fields:
  - Statistics and financial econometrics
  - Actuarial modeling
  - Mathematical finance
  - Other skills: communication skill and computer programming skill

Professional Qualification

- **Financial Risk Manager (FRM) Certificate Exam**
  - awarded by Global Association of Risk Professionals (GARP) http://www.garp.com (founded in 1996)
- **Professional Risk Managers (PRM) Exam**
  - awarded by Professional Risk Managers' International Association (PRMIA) http://www.prmia.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)		CAES9820 Academic English for Science Students (offered in both semesters)	

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 Probability modelling
  - STAT3612 Data mining
  - 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**

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

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

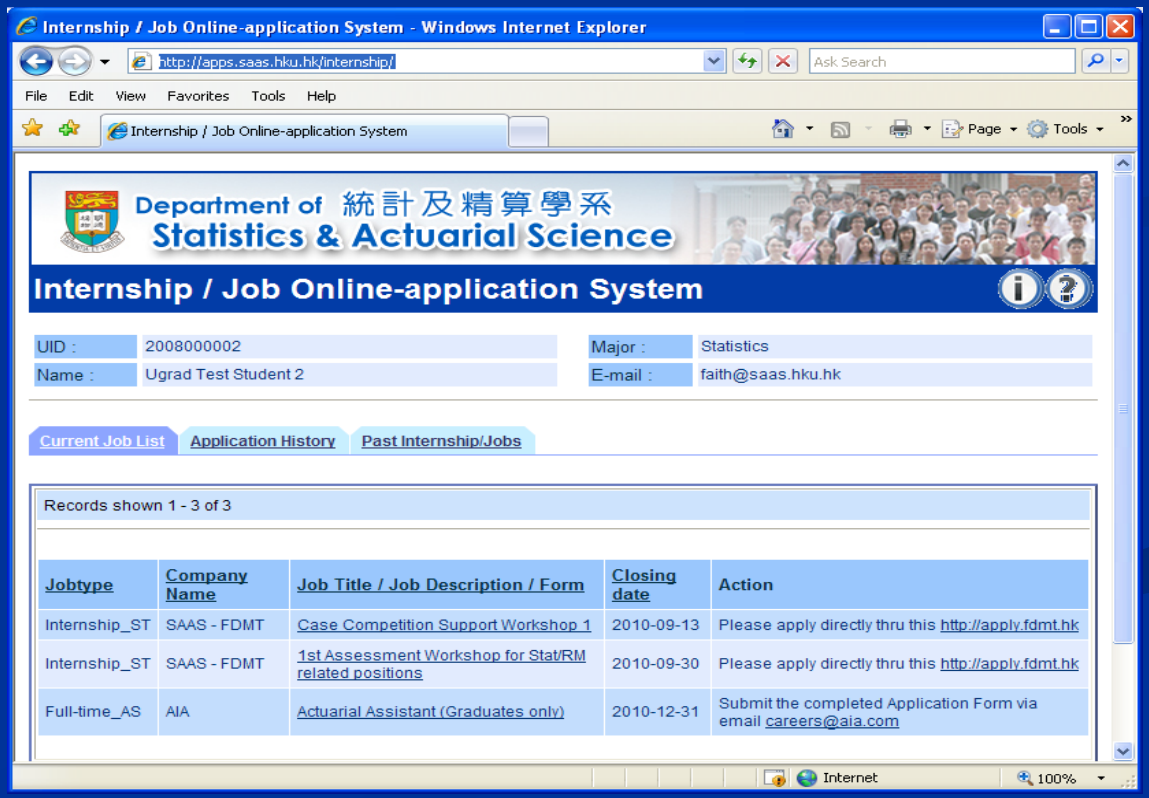
Support from University and Department

- **Department** : Computing facilities
  - two statistical computer laboratories
  - up-to-date software for teaching, learning, research

Support from University and Department

- **HKU** : Career Development and Resources for Students
  - NETmatch, NETjobs, JIJIS (Joint Institution Job Info. System)
- **Department** : Internship / Job Online Application System

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



Career Development Training

- **Summer IT course:**
  - Essential IT skills for statistical and risk analysts
- **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):

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

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

Course Equivalence Database

16. Canada - University of British Columbia

Canada - University of British Columbia

No.	Partner Code	Partner Credit/Unit	Partner Title	HKU Code	HKU Credit	HKU Title
1.	BIOC 302	3	General Biochemistry	BIOC2601	6	Metabolism
2.	BIOL 300	3	Fundamentals of Biostatistics	BIOL1608	6	Biostatistics
3.	BIOL 336	3	Fundamentals of Evolutionary	BIOL2210	6	Evolution
					6	Terrestrial Ecology
5.	COMM 370	3	Corporate Finance	STAT2807	6	Corporate Finance for Actuarial Science
6.	COMM 371	3	Investment Theory	STAT3806	6	Investment and Asset Management
7.	COMM 399	3	Logistics and Operations Management	STAT2306	6	Business Logistics
8.	COMM 473	3	Business Finance	STAT2807	6	Corporate Finance for Actuarial Science
9.	COMM 474	3	Fixed Income Markets and Management	STAT3806	6	Investment and Asset Management
10.	MATH 303	3	Introduction to Stochastic	STAT2303	6	Probability Modelling

Scholarships

- Available to students majoring in

  Risk Management / Statistics / Decision Analytics

  based on academic performance and/or other qualities

Student Peer Advisers in 2018-19

- General roles
  - to **offer advice** in relation to academic studies to freshmen; and
  - to **facilitate** freshmen's **smooth transition** from secondary to university education
- You are highly encouraged to contact the following **Student Peer Advisers (SPAs)** if you have any questions about your study (their contacts can be found at the Faculty's website)
  - Mr CHAN Ka Ho Andy (BSc Year 4)
  - Miss LIANG Wenxin (BSc Year 3)
  - Mr SU Yun-kuan (BSc Year 3)
  - Miss ZHAO Jie (BSc Year 4)

Q & A