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

<table>
<thead>
<tr>
<th>Basel I</th>
<th>Basel II</th>
<th>Basel III</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>2004</td>
<td>2018</td>
</tr>
</tbody>
</table>

Basel Accords

A set of banking regulation recommendations created by the Basel Committee on Banking Supervision (BCBS).
The central bank governors of the world's ten largest economies created the BCBC.

Credit Risk

Market Risk

Operational Risk
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

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

- Merger and Acquisitions
- Research
- Merchant Banking
- IPOs
- Risk Management
- Structuring of Derivatives
- Investment management

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

<table>
<thead>
<tr>
<th>Year</th>
<th>One</th>
<th>Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>Disciplinary Core</td>
<td>Science Foundation Courses</td>
</tr>
<tr>
<td></td>
<td>MATH1013 University Mathematics II</td>
<td>SCNC1111 Scientific Method and Reasoning</td>
</tr>
<tr>
<td></td>
<td>MATH2014 Multivariable Calculus and Linear Algebra</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAT2601 Probability and Statistics I</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAT2602 Probability and Statistics II</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAT3615 Practical Mathematics for Investment</td>
<td></td>
</tr>
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<tr>
<td>Language</td>
<td>CAES1000 Core University English (offered in both semesters)</td>
<td>CAES9821 Professional and Technical Communication for Mathematical Sciences (offered in both semesters)</td>
</tr>
</tbody>
</table>
Flow Chart of Disciplinary Courses for BSc Major in Risk Management

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

SCNC1111
Scientific Method and Reasoning

SCNC1112
Fundamentals of Modern Science

STAT2601
Probability and Statistics I

MATH2014
Multivariable Calculus and Linear Algebra

MATH1013
University Mathematics II

STAT1600
Statistics, Ideas and Concepts

CAES9821
Professional and Technical Communication for Mathematical Sciences

CAES1000
Core University English

STAT3615 (S2)
Practical Mathematics for Investment

STAT3618 (S2)
Derivatives and Risk Management

STAT3603 (S1)
Stochastic Processes

STAT3600
Linear Statistical Analysis

STAT3609 (S1)
The Statistics of Investment Risk

STAT3812 (S1)
Statistical Machine Learning

STAT3610 (NO)
Risk Management and Insurance

STAT3611 (S2)
Financial Economics II

STAT3655 (NO)
Survival Analysis

STAT4601 (S2)
Time-series Analysis

STAT4602
Sas and Statistical Analysis

STAT4608 (S2)
Market Risk Analysis

STAT4603 (S1)
Current Topics in Risk Management

STAT4606 (NO)
Risk Management and Basel Accords in Banking and Finance

STAT4607 (S2)
Credit Risk Analysis

Capstone:
STAT3729
STAT4710
STAT4766
STAT4799

Legend:

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
Round = 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  
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:

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

PRMIA
The Professional Risk Managers' International Association

www.edubiz.com
Support from University and Department

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

Contact person: Dr. Eric LI
<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

<table>
<thead>
<tr>
<th>Disciplinary Elective</th>
<th>Introductory</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH1013</td>
<td>FINA1310</td>
<td>STAT3612</td>
</tr>
<tr>
<td>STAT2601</td>
<td>STAT2602</td>
<td>STAT3901</td>
</tr>
<tr>
<td>STAT2604</td>
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<td>STAT3906</td>
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<td>STAT3910</td>
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<td></td>
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<td>STAT3953</td>
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</table>
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