Teaching Staff and their research interests

Dr. Eric C.K. Cheung BSc, HK; MMath, PhD Waterloo, ASA
Insurance Risk Theory; Ruin Theory; Aggregate Claims; Queuing Theory

Dr. K.C. Cheung BSc, PhD HK, ASA
Actuarial Science; Dependence Structures; Stochastic Orders; Risk Measures

Dr. Y.K. Cheng BSc, MPhil CUHK, PhD HK
Bioinformatics; Protein Modelling; Forensic Statistics; Monte Carlo Simulation

Prof. Tony W.K. Fung BScScC, HK; MSc, Lond, PhD HK, DIC
Statistical Diagnostics and Robustness; Longitudinal Data Analysis; DNA Fingerprinting and Forensic Statistics; Statistical Genomics; Credibility Theory

Dr. C.W. Kwan BSc, PhD HK
Influential observations; Multivariate statistics; Non-linear random model

Dr. Eddy K.F. Lam BSc St. Thomas; MA New Brunswick; PhD HK
Multivariate Survival Analysis; Semiparametric Regression; Medical Statistics

Prof. Stephen M.S. Lee BA BA, PhD Cantob
Bootstrap; Resampling Methods; Statistical Theory; Asymptotics and Applications

Dr. Guoqiang Li BSc, MSc, Peking, PhD HK
Time Series Analysis; Financial Econometrics; Financial Risk Management

Prof. W.K. Li BSc, MA York; PhD W Ont
Time Series Analysis; Financial Econometrics; Environmental Modelling; Financial Risk Management; Actuarial Applications

Dr. Gilbert C.S. Liu MScScC, Birm; MPhil CUHK, PhD HK
Time Series Analysis; Space-time Modelling; Environmental Statistics; Financial Time Series and Econometrics

Dr. Louis F. Ng BSc BA HK; MSc Br Col, PhD Tor; FSA, CFA, CFA
Asset Liability Management; Enterprise Risk Management; Insurance Pricing Models; Pension Projection Models; Regression Analysis

Dr. K.W. Ng BSc, CUHK, MSc Alberta, PhD Tor

Dr. Gary G. Tian BSc Hunan Normal; MSc Wuhan; PhD Chinese Acad of Sc
Missing data problems; Constrained parameter models; Variable selection; Sample surveys with sensitive questions; Biostatistics

Dr. Raymond W.L. Wong BSc, MPhil CUHK, MA, PhD Pittsburgh; ASA
Actuarial Science; Errors-in-variables Regression Models; Monte Carlo Simulations; Robustness Studies and Applications of Asymptotic Theory

Dr. Haolong Yang BSc Inner Mongolia; MMath Waterloo; PhD Alberta; ASA
Actuarial Science; Insurance Risk Models; Mathematical Finance

Dr. Jianfeng Yao BSc, PhD Paris XI
Random matrix theory and high-dimensional data analysis: large sample covariance matrices, high-dimensional estimation and testing. Inference for stochastic processes: non-linear time series and Markov switching processes; Image analysis and understanding using Markovian spatial models: image segmentation, motion analysis and tracking

Dr. Guosheng Yin MA Temple; MSc N Carolina; PhD N Carolina
Bayesian Adaptive Designs, Clinical Trials and Drug Development; Survival Analysis; Cancer Research

Dr. Philip L.H. Yu BSc, PhD HK
Data Mining and Machine Learning; Ranking Methods; Financial Data Mining; Risk Management; Environmental Statistics

Prof. K.C. Yuen BSc, MSc, PhD Calgary; ASA
Insurance Risk Modelling; Financial Risk Analysis; Survival Analysis

Dr. Zhiqiang Zhang BSc E China Normal, PhD HK
Time Series Analysis; Extreme Value Theory; Insurance Risk Modelling

General enquiries please contact: Department of Statistics and Actuarial Science
Tel: 2859 2466 Fax: 2858 9041 Email: ug_enquiry@saas.hku.hk
or visit the Departmental web page at http://www.hku.hk/statistics

### Bachelor of Science in Statistics
### Bachelor of Science in Risk Management

**Teaching Staff and their research interests**

- **Dr. Eric C.K. Cheung**: BSc, HK; MMath, PhD, Waterloo, ASA. Research interests: Insurance Risk Theory, Ruin Theory, Aggregate Claims, Queuing Theory.
- **Dr. K.C. Cheung**: BSc, PhD, HK, ASA. Research interests: Actuarial Science, Dependence Structures, Stochastic Orders, Risk Measures.
- **Dr. Y.K. Cheng**: BSc, MPhil, CUHK, PhD, HK. Research interests: Bioinformatics, Protein Modelling, Forensic Statistics, Monte Carlo Simulation.
- **Prof. Tony W.K. Fung**: BScScC, HK; MSc, Lond, PhD, HK, DIC. Research interests: Statistical Diagnostics and Robustness, Longitudinal Data Analysis, DNA Fingerprinting and Forensic Statistics, Statistical Genomics, Credibility Theory.
- **Dr. C.W. Kwan**: BSc, PhD, HK. Research interests: Influential observations, Multivariate statistics, Non-linear random model.
- **Dr. Eddy K.F. Lam**: BSc St. Thomas; MA, New Brunswick; PhD, HK. Research interests: Multivariate Survival Analysis, Semiparametric Regression, Medical Statistics.
- **Prof. Stephen M.S. Lee**: BA, PhD, Cantob. Research interests: Bootstrap, Resampling Methods, Statistical Theory, Asymptotics and Applications.
- **Dr. Guoqiang Li**: BSc, MSc, Peking, PhD, HK. Research interests: Time Series Analysis, Financial Econometrics, Financial Risk Management.
- **Dr. Gilbert C.S. Liu**: MScScC, Birm; MPhil, CUHK, PhD, HK. Research interests: Time Series Analysis, Space-time Modelling, Environmental Statistics, Financial Time Series and Econometrics.
- **Dr. Louis F. Ng**: BSc, BA, HK; MSc, Br Col, PhD, Tor; FSA, CFA, CFA. Research interests: Asset Liability Management, Enterprise Risk Management, Insurance Pricing Models, Pension Projection Models, Regression Analysis.
- **Dr. K.W. Ng**: BSc, CUHK, MSc, Alberta, PhD, Tor. Research interests: Foundation of inference, Converse of Bayes’ Theorem and applications, Distribution theory, Actuarial & Financial risk, Applications of asymptotic theory, Multivariate analysis, Linear models, Data mining & Informatics.
- **Dr. Gary G. Tian**: BSc, Hunan Normal; MSc, Wuhan; PhD, Chinese Acad of Sc. Research interests: Missing data problems, Constrained parameter models, Variable selection, Sample surveys with sensitive questions, Biostatistics.
- **Dr. Raymond W.L. Wong**: BSc, MPhil, CUHK, MA, PhD, Pittsburgh; ASA. Research interests: Actuarial Science, Errors-in-variables Regression Models, Monte Carlo Simulations, Robustness Studies and Applications of Asymptotic Theory.
- **Dr. Haolong Yang**: BSc, Inner Mongolia; MMath, Waterloo; PhD, Alberta; ASA. Research interests: Actuarial Science, Insurance Risk Models, Mathematical Finance.
- **Dr. Jianfeng Yao**: BSc, PhD, Paris XI. Research interests: Random matrix theory and high-dimensional data analysis, large sample covariance matrices, high-dimensional estimation and testing, Inference for stochastic processes, non-linear time series and Markov switching processes, Image analysis and understanding using Markovian spatial models, image segmentation, motion analysis and tracking.
- **Dr. Guosheng Yin**: MA, Temple; MSc, N Carolina; PhD, N Carolina. Research interests: Bayesian Adaptive Designs, Clinical Trials and Drug Development, Survival Analysis, Cancer Research.
- **Dr. Philip L.H. Yu**: BSc, PhD, HK. Research interests: Data Mining and Machine Learning, Ranking Methods, Financial Data Mining, Risk Management, Environmental Statistics.
- **Prof. K.C. Yuen**: BSc, MSc, PhD, Calgary; ASA. Research interests: Insurance Risk Modelling, Financial Risk Analysis, Survival Analysis.
- **Dr. Zhiqiang Zhang**: BSc, E China Normal, PhD, HK. Research interests: Time Series Analysis, Extreme Value Theory, Insurance Risk Modelling.

For general enquiries, please contact the Department of Statistics and Actuarial Science at Tel: 2859 2466, Fax: 2858 9041, Email: ug_enquiry@saas.hku.hk, or visit their web page at http://www.hku.hk/statistics.
Given the expanding use of data in all realms of society, we encourage students from all fields to consider pursuing a good combination with their major discipline.

Through selective courses in the University, particularly in the Faculties of Science, Business and Economics, and Social Sciences, our students can acquire good exposures to mathematics, life sciences, economics, finance, accounting, business, sociology, psychology, computer science and other disciplines.

The world is rife with uncertainty. Decisions are often made in spite of incomplete data, imperfect knowledge and random variation. Statistics is the study of such variability and uncertainty by developing and applying analytic and quantitative tools which involve logical thinking, problem formulation, probability reasoning and intensive data analyses. Statistics appears in almost all areas of science, business, research, and wherever data are obtained for the purpose of finding information in support of decision making. Statistics has been described as the generic science of making conclusions in the presence of uncertainty.

Our programmes cater for students with good mathematics background and are designed to meet a steadily rising demand for specialist statisticians or quantitative analysts in government, business, finance, industry, as well as in research and teaching in local and overseas institutions.

### Required courses (72 credits)

1. **Introductory level courses (18 credits)**
   - STAT1301 & STAT1302
   - plus at least one course from STAT1303, STAT1304, STAT1323

2. **Advanced level courses (48 credits)**
   - STAT2301, STAT3301, STAT3302 & STAT3304
   - Plus at least four courses from Lists A and B, among which at least one course from List A:
     - List A: STAT2302, STAT2303, STAT2304, STAT3316, STAT3317
     - List B: STAT2305, STAT2306, STAT2307, STAT2308, STAT2312, STAT2313, STAT3306, STAT3811

3. **Experiential learning requirement (6 credits)**

   - Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:
     - STAT2319 Directed Studies in Statistics
     - STAT3319 Statistics project (12 credits)
     - STAT3998 Internship
     - STAT3999 Professional practice (non-credit bearing)
     - SCNC2005 Career development for science students
     - Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)
     - Any other activities determined by the Faculty to conform to the spirit of experiential learning experience
   - *If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6 credits advanced level statistics course (STAT3303 or STAT3323 level)

### Course Title

- **STAT2301** Elementary Statistical Methods
- **STAT2302** Business Statistics
- **STAT2303** Probability and Statistics I
- **STAT2304** Probability and Statistics II
- **STAT2305** Data Management
- **STAT2306** Design and Analysis of Sample Surveys
- **STAT2307** Introductory Statistics
- **STAT2323** Introduction to Demographic and Socio-economic Statistics
- **STAT1301** Linear Statistical Analysis
- **STAT2302** Statistical Inference
- **STAT2303** Probability Modelling
- **STAT2304** Design and Analysis of Experiments
- **STAT2305** Quality Control and Management
- **STAT2306** Business Logistics
- **STAT2307** Statistics in Clinical Medicine & Biomedical Research
- **STAT2308** Statistical Genetics
- **STAT2309** The Statistics of Investment Risk
- **STAT2310** Risk Management and Insurance
- **STAT2311** Computer-aided Data Analysis
- **STAT2312** Data Mining
- **STAT2313** Marketing Engineering
- **STAT2314** Business Forecasting
- **STAT2315** Practical Mathematics for Investment
- **STAT2318** Directed Studies in Statistics
- **STAT3301** Time-series Analysis
- **STAT3302** Multivariate Data Analysis
- **STAT3303** Deministrics and Risk Management
- **STAT3304** Computer-aided Statistical Modelling
- **STAT3306** Selected Topics in Statistics
- **STAT3316** Advanced Probability
- **STAT3317** Computational Statistics
- **STAT3319** Statistics Project
- **STAT3320** Risk Management and Basel Accords in Banking and Finance
- **STAT3321** Credit Risk Analysis
- **STAT3322** Market Risk Analysis
- **STAT2801** Life Contingencies
- **STAT2805** Creditibility Theory and Loss Distributions
- **STAT2807** Corporate Finance for Actuarial Science
- **STAT2812** Financial Economics I
- **STAT3810** Risk Theory
- **STAT3811** Survival Analysis
- **STAT3821** Financial Economics II
- **STAT3988** Statistics Internship
- **STAT3989** Essential IT skills for statistical and risk analysts
The Department of Statistics and Actuarial Science, established in 1967, is one of the largest statistics departments in the Far East region. It serves the University and the disciplines of Statistics and Actuarial Science through the interrelated functions of teaching, consultation and research. The department’s teaching and learning is featured by (1) a BSc degree majoring in (i) Statistics or (ii) Risk Management, (2) a BSc(Actuarial Science) degree, (3) a Master of Statistics degree by course work, and (4) research postgraduate degrees of MPhil and PhD.

The Department of Statistics and Actuarial Science is the ideal department to provide students with solid training in probability and statistics — the subjects that underpin the study of statistics, risk management and actuarial science. Through selected courses in the University, particularly in the Faculties of Science, Business and Economics, and Social Sciences, our students can acquire good exposures to mathematics, life sciences, economics, finance, accounting, business, sociology, psychology, computer science and other disciplines.

Aims and Features

The world is rife with uncertainty. Decisions are often made in spite of incomplete data, imperfect knowledge and random variation. Statistics is the study of such variability and uncertainty by developing and applying analytic and quantitative tools which involve logical thinking, problem formulation, probability reasoning and intensive data analyses. Statistics appears in almost all areas of science, business, research, and wherever data are obtained for the purpose of finding information in support of decision making. Statistics has been described as the generic science of making conclusions in the presence of uncertainty.

Our programmes cater for students with good mathematics background and are designed to meet a steadily rising demand for specialist statisticians or risk analysts in government, industry, finance and in research and teaching in local and/or overseas institutions. Students interested in our programmes may take either Statistics or Risk Management as their major, and major or minor in a second subject. They may, in particular, minor in Actuarial Studies, which makes a good combination with their major discipline.

The Department

Given the expanding use of data in all realms of the society, we encourage students from all fields to consider pursuing either a major or minor in Statistics or Risk Management. We have students who are double majors in various fields of application, and minors from a wide range of departments across campus. A minor in Statistics or Risk Management can be an excellent complement to a degree in another field.

Programme Structure

Students admitted to the BSc degree may choose to major or minor in Statistics and/or Risk Management, and/or minor in Actuarial Studies. They may in addition major or minor in an option available in the Faculties of Science, Arts, Business and Economics, Education and Social Sciences, among others. In particular, the Minor in Actuarial Studies offered by the Faculty of Science makes a good choice for students majoring in Statistics or Risk Management.

Major in Statistics

The Major in Statistics curriculum centres on the study of statistics, a scientific discipline characterized by the development and applications of analytic and quantitative tools which involve logical thinking, problem formulation, probability reasoning and intensive data analyses. The programme aims to equip students with powerful mathematical, analytic and computational skills, which are in great demand in practical areas where data are obtained for the purpose of finding information in support of decision making. It prepares the students with a strong background and in statistical concepts, and provides broad and solid training in applied statistical methodologies. The curriculum is constantly revised to meet a steadily rising demand for specialist statisticians or quantitative analysts in government, business, finance, industry, as well as in research and teaching in local and overseas institutions.

Required courses (72 credits)

1. Introductory level courses (18 credits)
   - STAT1301 & STAT1302
   - plus at least one course from STAT1303, STAT1304, STAT1323

2. Advanced level courses (48 credits)
   - STAT2301, STAT2303, STAT2302 & STAT3304
   - Plus at least four courses from Lists A and B, among which at least one course from List A
     - List A: STAT2302, STAT2303, STAT2304, STAT3316, STAT3317
     - List B: STAT2305, STAT2306, STAT2307, STAT2308, STAT2312, STAT2313, STAT3306, STAT3310, STAT3311

3. Experiential learning requirement (6 credits)*
   - Students must take at least one of the following forms of extra-ordinary learning experience to fulfil the experiential learning requirement:
     - STAT2318 Directed studies in statistics
     - STAT3319 Statistics project (12 credits)
     - STAT3388 Statistics internship
     - STAT3389 Essential IT skills for statistical and risk analysts (non-credit bearing)
     - SCNC2005 Career development for science students
     - Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)
     - Any other activities determined by the Faculty to conform to the spirit of experiential learning experience
   - * If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional 6-credit advanced level statistics course (STAT2303 or STAT3301 level)

Course Title

- STAT2301: Elementary Statistical Methods
- STAT2302: Business Statistics
- STAT3101: Probability and Statistics I
- STAT3102: Probability and Statistics II
- STAT3303: Data Management
- STAT3304: Design and Analysis of Sample Surveys
- STAT3306: Introductory Statistics
- STAT3312: Introduction to Demographic and Socio-economic Statistics
- STAT3301: Probability and Statistics, Foundations of Actuarial Science
- STAT3302: Linear Statistical Analysis
- STAT3303: Statistical Inference
- STAT3304: Probability Modelling
- STAT3305: Design and Analysis of Experiments
- STAT3306: Probability and Statistics
- STAT3307: Data Management and Information
- STAT3308: Risk Management and Insurance
- STAT3309: Computational Data Analysis
- STAT2312: Data Mining
- STAT2313: Marketing Engineering
- STAT2314: Business Forecasting
- STAT2315: Practical Mathematics for Investment
- STAT2316: Advanced Probability
- STAT2317: Computational Statistics
- STAT2318: Risk Management and Basel Accords in Banking and Finance
- STAT2319: Statistics Project
- STAT2320: Credit Risk Analysis
- STAT2321: Market Risk Analysis
- STAT2322: Life Contingencies
- STAT2323: Credit Theory and Loss Distributions
- STAT2324: Corporate Finance for Actuarial Science
- STAT2325: Financial Economics I
- STAT2326: Risk Theory
- STAT2327: Survival Analysis
- STAT2328: Financial Economics II
- STAT2329: Statistics Internship
- STAT2330: Essential IT skills for statistical and risk analysts
## Major in Risk Management

The Risk Management curriculum at the University of Hong Kong aims to provide students with the skills and expertise to enable them to acquire the theory and methodology behind the scientific process of risk management, with application to actuarial science, finance, and other areas of interest. It is designed to provide solid training in the concepts of the risk management process, statistical models and methods of risk management, and good risk management practice. Core courses in the curriculum emphasize fundamental concepts and nature of risk assessment, risk management and governance from different standpoints while elective courses provide either training in specific Risk Management disciplines or an extension of knowledge aiming to give students more modeling, technical and analytical skills in risk management, including discrete-time models in finance, stochastic calculus with financial applications, and financial time series modeling. Through participating in experiential learning activities including research-based projects, industrial internships and overseas exchanges, students could enhance their knowledge in risk management and exposure in managing risk in practice, and improve their thinking and communication skills.

### Required courses (72 credits)

1. Introductory level courses (18 credits)
   - STAT1301 & STAT1302
   - plus at least one course from: STAT1303, STAT1304, STAT1323

2. Advanced level courses (48 credits)
   - STAT2301, STAT2309, STAT2311 & STAT3301
   - plus at least four courses from: STAT2300, STAT2310, STAT2312, STAT3303, STAT3320, STAT3321, STAT3322, STAT3382

### 3. Experiential learning requirement (6 credits)*

Students must take at least one of the following forms of extraordinary learning experience to fulfill the experiential learning requirement:

- STAT2311 Directed studies in statistics
- STAT3319 Statistics project (12 credits)
- STAT3998 Statistics internship
- STAT3999 Essential IT skills for statistical and risk analysts (non-credit bearing)
- SCNC2003 Career development for science students
- Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)
- Any other activities determined by the faculty to conform to the spirit of experiential learning experience

* If the extraordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional non-credit advanced level statistics course (STAT2XXX or STAT3XXX level)

## Minor Options

### Minor in Actuarial Studies

The Minor in Actuarial Studies aims to provide interested students with an introduction to the basic concepts and methodologies in Actuarial Science. The minor curriculum is designed particularly for students from different majors to enhance their interest in Actuarial Science and to strengthen their confidence and potential in solving mathematical, financial, economical and investment-related problems.

### Required courses (36 or 42 credits)

1. Introductory level courses (12 or 18 credits)
   - a. For students majoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT1303, STAT2303, STAT2306, STAT2315
   - b. For students minoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT1302, STAT2303, STAT2315
   - c. For students not belonging to the above two categories (18 credits)
     - Three courses from: STAT1301, STAT1302, STAT1304, STAT2303, STAT2315

2. Advanced level courses (24 credits)
   - At least four courses from: STAT2801, STAT2805, STAT2807, STAT2812, STAT3381, STAT3382

### Minor in Statistics

The curriculum of the Statistics minor is structured specifically to cater for the general need of non-statistical disciplines and provide basic training in statistical methodologies.

### Required courses (36 credits)

1. Introductory level courses (12 credits)
   - a. For students majoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT1303, STAT2303, STAT2306, STAT2315
   - b. For students minoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT1302, STAT2303, STAT2315
   - c. For students not belonging to the above two categories (18 credits)
     - Three courses from: STAT1301, STAT1302, STAT1304, STAT2303, STAT2315

2. Advanced level courses (24 credits)
   - At least four courses from: STAT2309, STAT2310, STAT2311, STAT2312, STAT2314, STAT3301, STAT3303, STAT3330, STAT3332, STAT3333, STAT3334, STAT3381

### Minor in Risk Management

The Risk Management minor aims to provide interested students with basic concepts of risk management and fundamental skills of employing various statistical techniques for managing risk. The minor curriculum is particularly designed for students from different majors to enhance their interest in Risk Management or to complement their major of study.

### Required courses (36 credits)

1. Introductory level courses (12 credits)
   - a. For students majoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT1303, STAT2303, STAT2306, STAT2315
   - b. For students minoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT1302, STAT2303, STAT2315
   - c. For students not belonging to the above two categories (18 credits)
     - Three courses from: STAT1301, STAT1302, STAT1304, STAT2303, STAT2315

2. Advanced level courses (24 credits)
   - At least four courses from: STAT2309, STAT2310, STAT2311, STAT2312, STAT2314, STAT3301, STAT3303, STAT3330, STAT3332, STAT3333, STAT3334, STAT3381

### Admission Requirements

Students who wish to major in Statistics or Risk Management can apply for entry to the BSc programme under the single admission scheme.

#### JUPAS applicants

Selection for admission is based mainly on HKALE results, HKCEE results, and academic references [www.hku.hk/admission/ug.html].

#### Non-JUPAS applicants

Non-JUPAS applicants are selected based on academic merit, language and communication skills, motivation, relevant work experience, and extra-curricular activities.
Major in Risk Management

The Risk Management curriculum at the University of Hong Kong aims to provide students with the skills and expertise to enable them to acquire the theory and methodology behind the scientific process of risk management, with application to actuarial science, finance and other areas of interest. It is designed to provide solid training in the concepts of risk management process, statistical models and methods of risk management, and good risk management practice. Core courses in the curriculum emphasize fundamental concepts and nature of risk assessment, risk management and governance from different standpoints while elective courses provide either training in specific Risk Management disciplines or an extension of knowledge aiming to give students more modeling, technical and analytical skills in risk management, including discrete-time models in finance, stochastic calculus with financial applications, and financial time series modeling. Through participating in experiential learning activities including research-based projects, industrial internships and overseas exchanges, students could enhance their knowledge in risk management and exposure in managing risk in practice, and improve their thinking and communication skills.

Required courses (72 credits)

1. Introductory level courses (18 credits)
   - STAT1301 & STAT1302
     plus at least one course from: STAT1303, STAT1304, STAT1323

2. Advanced level courses (48 credits)
   - STAT2301, STAT2309, STAT2315 & STAT3301
     plus at least four courses from: STAT2303, STAT2310, STAT3300, STAT3320, STAT3321, STAT3322, STAT3861

3. Experiential learning requirement (6 credits)*
   - Students must take at least one of the following forms of extra-ordinary learning experience to fulfill the experiential learning requirement:
     - STAT2318 Directed studies in statistics
     - STAT3319 Statistics project (12 credits)
     - STAT3998 Statistics internship
     - STAT3999 Essential IT skills for statistical and risk analysts (non-credit bearing)
     - SCNC2005 Career development for science students
     - Exchange programme via HKU World Wide Exchange Programme (1 semester or 1 year)
     - Any other activities determined by the Faculty to conform to the spirit of experiential learning experience
   - If the extra-ordinary learning experience is fulfilled by non-credit bearing activities, students must take an additional non-credit advanced level statistics course (STAT2XXX or STAT3XXX or STAT6XXX level)

Minor in Risk Management

The Risk Management minor aims to provide interested students with an introduction to the basic concepts and methodologies in Actuarial Science. The minor curriculum is designed particularly for students from different majors to enhance their interest in Actuarial Science and to strengthen their confidence and potential in solving mathematical, financial, economical and investment-related problems.

Required courses (36 credits)

1. Introductory level courses (12 or 18 credits)
   - For students majoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT2318, STAT2303, STAT2306, STAT2315
   - For students minoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT1302, STAT2303, STAT2315
   - For students not belonging to the above two categories (18 credits)
     - Three courses from: STAT1301, STAT1302, STAT1303, STAT2303, STAT2315

2. Advanced level courses (24 credits)
   - At least four courses from: STAT2301, STAT2309, STAT2310, STAT2311, STAT2312, STAT2313, STAT2314, STAT3301, STAT3302, STAT3303, STAT3304, STAT3306, STAT3316, STAT3317, STAT3861

Minor in Actuarial Studies

The Minor in Actuarial Studies aims to provide interested students with an introduction to the basic concepts and methodologies in Actuarial Science. The minor curriculum is designed particularly for students from different majors to enhance their interest in Actuarial Science and to strengthen their confidence and potential in solving mathematical, financial, economical and investment-related problems.

Required courses (36 or 42 credits)

1. Introductory level courses (12 or 18 credits)
   - Students majoring in Risk Management or Statistics (12 credits)
     - Two courses from: STAT2312, STAT2314, STAT2315, STAT3301, STAT3303, STAT3811
   - Students majoring in other disciplines (18 credits)
     - One course from: STAT1301, STAT1302, STAT1303
     - Plus at least one of the following courses: STAT1302, STAT1303, STAT1304

2. Advanced level courses (24 credits)
   - At least four courses from: STAT2301, STAT2309, STAT2310, STAT2311, STAT2312, STAT2313, STAT2314, STAT3301, STAT3302, STAT3303, STAT3304, STAT3306, STAT3316, STAT3317, STAT3861

Minor in Risk Management

The Risk Management minor aims to provide interested students with basic concepts of risk management and fundamental skills of employing various statistical techniques for managing risk. The minor curriculum is particularly designed for students from different majors to enhance their interest in Risk Management or to complement their major of study.

Required courses (36 credits)

1. Introductory level courses (12 credits)
   - STAT2301 or STAT2302 or STAT1301 or one of the advanced level courses listed below

2. Advanced level courses (24 credits)
   - At least four courses from: STAT2309, STAT2310, STAT2311, STAT2312, STAT2313, STAT2314, STAT2315, STAT3301, STAT3303, STAT3304, STAT3321, STAT3322

Minor in Statistics

The curriculum of the Statistics minor is structured specifically to cater for the general need of non-statistical disciplines and provide basic training in statistical methodologies and their applications to practical problems. It aims to provide students with a strong and rigorous sense of quantitative reasoning that has become an indispensable skill in nearly all disciplines.

Required courses (36 credits)

1. Introductory level courses (12 credits)
   - One course from: STAT2301, STAT2302, STAT1301, STAT1304
   - Plus at least one of the following courses: STAT1302, STAT1303, STAT1304

2. Advanced level courses (24 credits)
   - At least four courses from: STAT2301, STAT2309, STAT2310, STAT2311, STAT2312, STAT2313, STAT2314, STAT3301, STAT3302, STAT3303, STAT3304, STAT3306, STAT3316, STAT3317, STAT3861

Admission Requirements

Students who wish to major in Statistics or Risk Management can apply for entry to the BSc programme under the single admission scheme.

JUPAS applicants

Selection for admission is based mainly on HKALE results, HKCEE results, and academic references (www.hku.hk/admission/ug.htm).

Non-JUPAS applicants

Non-JUPAS applicants are selected based on academic merit, language and communication skills, motivation, relevant work experience, and extra-curricular activities.
The world is becoming more and more quantitative and data focused. Many professions depend on numerical measurements to make decisions in the face of uncertainty. Jobs for statisticians and risk managers are found in all sectors of the society. After the 1998 Asian financial crises and the recent financial Tsunami in 2008, many governments placed increased emphasis in risk management. In addition, the implementation of BASEL Accord II for the financial institutions over the world boosts the demand of jobs using quantitative risk analysis and management. Our graduates readily find employment in government, banking, finance, risk management, insurance, IT, marketing research, hospitals, environmental protection, scientific research and universities. They are well-received by top graduate schools and organizations. Statisticians often play critical roles in large-scale, multidisciplinary studies, providing guidance on all aspects of data collection and determining objective findings. Our graduates have jobs under surprisingly many different titles, which are related to collection, analysis and interpretation of data in support of decision making in all sorts of institutions and companies.

Job opportunities in statistics and risk management are projected to remain favourable in the future. As the demands of quantitative skills from every field rise, an increasing number of statisticians and risk-managers are required. For example, our graduates have found employment with:

- ABN AMRO N.V., Private Banking (Special Products Assistant)
- AC Nielsen (China) Limited (Manager)
- Aviva General Insurance Limited (Analyst)
- Bank of China (Hong Kong) Limited (Senior Management Trainee)
- Bank of Communications (Credit Analyst)
- Census and Statistics Department, HKSAR (Commissioner/Senior Statistician/Statistician/Research Manager)
- Citibank (Hong Kong) Limited (Vice President)
- Chicago Mercantile Exchange, U.S. (Director of Research & Product Development)
- DKR Oasis, HK (Product Controller)
- First Shanghai Capital Limited (Strategist)
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Career Prospects

Employment Sectors vs % of Graduates

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<th>Sector</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>Three</td>
<td>20%</td>
</tr>
<tr>
<td>Four</td>
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Student Testimonial

Wan Ka Shing, Terry, 2010 graduate, BSc (Double Major in Risk Management & Finance)

Working as a Special Products Assistant in ABN AMRO N V. Private Banking

A variety of majors of HKU Science degree have given our students the edge with freedom of academic choices. Majoring in Risk Management can cultivate one’s numerical sense and solid statistical knowledge which set us apart from students in other majors. Meanwhile it also crosses over into finance field for practice. It is no mean task to accomplish this major as the courses are challenging but highly related to working environment such as data mining and database management. In a sense, I have achieved all I had hoped for in university academic life – comprehensive statistical knowledge, intensive training of numerical sense and a fusion of financial and statistical study. I pride myself on my graduation in Risk Management.

LO Pak Hang, 2010 Graduate, BSc (Risk Management)

Mphil. Candidate, HKU
During my undergraduate study at the Department, I could not imagine that probability and statistics have been tremendously important tools for solving problems with randomness. This programme has provided me solid probability and statistics concepts and strong programming skills, such as SAS and VBA programming, in such a way that we are well trained to be professional in future career. Also, advanced knowledge and concepts taught in courses such as Advanced Probability and Research Methods in Statistics have laid down a solid foundation for us to do a research degree in various fields.

Fong Oi Kwan, BSc (Risk Management)

University of Western Australia, one semester

I remembered when I stepped my foot in Australia, ‘Freedom’ is the word I could think of. And what follows freedom are options and fear to make a choice. This trip is all about me and how a choice I made can seriously affect what I will encounter. I made many choices here. I choose my own accommodation. I choose my own part time job. I choose the kind of life I want to lead here. I became more confident and more aware of the life I want to lead after this trip.

Yeung Hoi Ting, BSc (Statistics)

Akita International University, one semester

I am glad to have a fruitful semester in Japan. It’s a good chance for me to be independent and experience unique culture of Japan. Harvesting, skiing, being an English assistant and having picnic with elementary school students are all unforgettable memories during my exchange period. It was also nice to meet a lot of friends who came from different countries.

Wan Ho Lam William, BSc (Risk Management)

UCLA

Exchange life must be one of the most unforgettable experience in my life. Apart from going to lectures that are taught with different style, there is also a lot to explore in LA such as Hollywood, Las Vegas and those famous beaches. This is the opportunity you do not want to miss in university!
The world is becoming more and more quantitative and data focused. Many professions depend on numerical measurements to make decisions in the face of uncertainty. Jobs for statistics graduates are found in all sectors of the society. After the 1998 Asian financial crisis and the recent financial tsunami in 2008, many governments placed increased emphasis in risk management. In addition, the implementation of Basel Accords II for the financial institutions over the world boosts the demand of jobs using quantitative risk analysis and management. Our graduates readily find employment in government, banking, finance, risk management, insurance, IT, marketing research, hospitals, environmental protection, scientific research and universities. They are well-received by top graduate schools and organizations. Statisticians often play critical roles in large-scale, multidisciplinary studies, providing guidance on all aspects of data collection and determining objective findings. Our graduates have jobs under surprisingly many different titles, which are related to collection, analysis and interpretation of data in support of decision making in all sorts of institutions and companies.

Job opportunities in statistics and risk management are projected to remain favourable in the future. As the demands of quantitative skills from every field rise, an increasing number of statisticians and risk-managers are required. For example, our graduates have found employment with:

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- AC Nielsen (China) Limited (Manager)
- Aviva General Insurance Limited (Analyst)
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There is no better training than obtaining solid hands-on experience in the real workplace. Our internship programme serves precisely this purpose. As an intern, the student will gain insights into the challenging world and daily activities of an Actuary or Statistician while strengthening his/her technical, analytical and communications skills.

Students who declare Risk Management and/or Statistics as first Major are eligible to join the internship programme. Upon successful job offer, the student may also wish to enroll in the course STAT3988 Statistics Internship in order to have his/her internship recognized on transcripts.

List of companies participating in the internship programme:

- AASTOCKS
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LEE Chun Yin, BSc(Risk Management & Finance)
Census & Statistics Department, HKSAR, Summer Intern, 2010

Taking part in the internship programme can broaden your cultural exposure, sensitivity and disciplinary concepts beyond your imagination, and enable you to apply your learning in a real-life context outside the campus.

Students can also gain satisfaction and confidence through work recognition from internships. All these help one to set goals and make corresponding plans for their future careers at an earlier stage. Students should be well prepared in terms of knowledge and attitude for the internship programme, as it is such a great opportunity of learning.

TSANG Ka Wai, BSc(Risk Management)
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I was glad to have the chance of working as a summer intern in FTSE. Not only did the internship give me insights into the financial world, it also let me meet a lot of highly experienced professionals in the industry. After the 2-month intensive training in FTSE, both my communication skills and research technique were enhanced greatly. I truly believe that gaining experience from internships is undoubtedly a major stage in one’s future career path.

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Job hunting is a kind of learning process. You have to know more about yourself and develop interests in that particular job industry. I believe that this is the most important key in getting a job.

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Alumni Mentorship Scheme

The Scheme aims at providing a two-way communication between mentors and mentees. Through regular gathering and mutual sharing, mentees can learn from the mentors’ life experience and at the same time understand more about graduates’ employment situation and career prospects. In return, mentors will receive from the mentees the most updated information of current students, the Statistics and Actuarial Science Society (SASS), the Department and the University at large. Mentors may also get acquainted with their counterparts working in similar fields through this scheme.

Scholarships

There are many scholarships available to statistics students in each year of their study. In particular, some of our statistics students have been awarded the following scholarships:

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- Mizuho & WHB Scholarship
- Ellen Koo Prize in Social Sciences
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- Chan Kai Ming Prize
- Chung Hwa Travel Service Scholarships

Computing Facilities

The Department is well supplied with computing facilities. Every staff member is provided with a desktop computer with connections to the campus network and the Internet. Software for e-mail and browsing the Internet are installed in all computers. There are two computer laboratories in the department for teaching purposes. One of the computer laboratories is equipped with 49 computers and the other with 19 computers, all connected with LCD monitors. We have a LINUX server and a web server for supporting our web service. There are also 3 Windows servers are used for sharing files and printers. Other facilities include 13 networked printers, scanners, etc. Our staff and students can use a lot of statistical software such as SAS with Enterprise Miner, SPSS, MATLAB, Mathematica, R, JMP, GAUSS, TAS, etc. and other software for compiling programs. Software such as TeX and MS Office are provided for writing scientific manuscripts.

Members of Advisory Board of Statistics & Risk Management Study Programmes

Dr. Ivan S. F. Chan
Senior Director, Clinical Bio-statistics, Merck Research Laboratories

Dr. Richard Co
Director, Research & Product Development, CME Group

Mr. H.W. Fung
Commissioner, Census & Statistics Department, HK SAR

Professor TL Lai
Department of Statistics, Stanford University

Mr. David Miller
Chief Operating Officer, The Professional Risk Managers’ International Association (PRMIA)

Professor Charles S. Tapiero
The Taylor Chair Professor in Finance Engineering and Technology Management Department of Finance and Risk Engineering The Polytechnic University of New York

Mr. Vic Tham
Managing Director & Regional Head, Business & Operational Risk Management Wholesale Banking, Greater China & Japan Standard Chartered Bank (Hong Kong) Ltd.

Professor George Tao
Graduate School of Business, The University of Chicago

Dr. Naitie Ting
K & L Consulting Services

Distinguished Visiting Professor in Statistics

Professor Howell TONG, Honorary Fellow, Institute of Actuaries, U.K., the founding Chair of Statistics at the CUHK, and the founding Dean of Graduate School of HKU, is presently Emeritus Professor of Statistics at the London School of Economics and Political Science. He served as a Pro-Vice-Chancellor of HKU, 2002-2004. Professor Tong received the Year-2000 Chinese National Natural Science Prize (Class II) in Mathematics and Mechanics and the sole recipient of the 2002 Distinguished Research Achievement Award at HKU. He is a Foreign Member of the Norwegian Academy of Science and Letters. He is a pioneer of non-linear time series models including, in particular, the threshold model. Professor Tong was awarded the Guy Medal in Silver by the Royal Statistical Society (U.K.) in 2007 for his many important contributions to time series analysis.

Distinguished Visiting Professor in Actuarial Science

Professor Hans U. GERBER, Past President of the Institute of Actuarial Science at the University of Lausanne, Switzerland, is a leader in actuarial science in the world. He has authored several influential actuarial textbooks which have been translated into many languages, including Chinese. In 1995, he won the Centennial Award of the International Actuarial Association. He is a doctor honoris causa of the University of Leuven (2001) and of the University of Lyon (2010). He was awarded three times the Annual Halmstad Prize (for the best paper in actuarial research), and he obtained three times the Annual Prize of the Society of Actuaries.
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Members of Advisory Board of Statistics & Risk Management Study Programmes
Dr. Ivan S.F. Chan
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Distinguished Visiting Professor in Statistics
Professor Howell Tong, Honorary Fellow, Institute of Actuaries, U.K., the founding Chair of Statistics at the CUHK, and the founding Dean of Graduate School of HKU, is presently Emeritus Professor of Statistics at the London School of Economics and Political Science. He served as a Pro-Vice-Chancellor of HKU, 2002-2004. Professor Tong received the Year-2000 Chinese National Natural Science Prize (Class II) in Mathematics and Mechanics and the sole recipient of the 2002 Distinguished Research Achievement Award at HKU. He is a Foreign Member of the Norwegian Academy of Science and Letters. He is a pioneer of non-linear time series models including, in particular, the threshold model. Professor Tong was awarded three times the ‘Gray Medal’ in Silver by the Royal Statistical Society (U.K.) in 2007 for his many important contributions to time series analysis.

Distinguished Visiting Professor in Actuarial Science
Professor Hans U. Gerber, Past President of the Institute of Actuarial Science at the University of Lausanne, Switzerland, is a leader in actuarial science in the world. He has authored several influential actuarial textbooks which have been translated into many languages, including Chinese. In 1995, he won the Centennial Award of the International Actuarial Association. He is a doctor honoris causa of the University of Leuven (2001) and of the University of Lyon (2010). He was awarded three times the Annual Holmsted Prize (for the best paper in actuarial research), and he obtained three times the Annual Prize of the Society of Actuaries.
Teaching Staff and their research interests

Dr. Eric C.K. Cheung BSc, HK; MMath, PhD Waterloo, ASA
Insurance Risk Theory; Ruin Theory; Aggregate Claims; Queuing Theory

Dr. K.C. Cheung BSc, PhD HK, ASA
Actuarial Science, Dependence Structures; Stochastic Orders; Risk Measures

Dr. Y.K. Chung BSc, MPhil CUHK, PhD HK
Bioinformatics; Protein Modelling; Forensic Statistics; Monte Carlo Simulation

Prof. Tony W.K. Fung BScScSc HK; MSc, Lond, PhD HK; DIC
Statistical Diagnostics and Robustness; Longitudinal Data Analysis; DNA Fingerprinting and Forensic Statistics; Statistical Genomics; Credibility Theory

Dr. C.W. Kwan BSc, PhD HK
Influential observations; Multivariate statistics; Non-linear random model

Dr. Eddy K.F. Lam BA St. Thomas; MA New Brunswick; PhD HK
Multivariate Survival Analysis; Semiparametric Regression; Medical Statistics

Prof. Stephen M.S. Lee BA, PhD Cantab
Bootstrap; Resampling Methods; Statistical Theory: Asymptotics and Applications

Dr. Guodong Li BSc, MSc Peking; PhD HK
Time Series Analysis; Financial Econometrics; Financial Risk Management

Prof. K.W. Ng BSc CUHK, MSc Alberta; PhD Tor
Foundation of inference; Converse of Bayes’ Theorem and applications; Distribution theory; Actuarial & Financial risk; Applications of asymptotic theory; Multivariate analysis; Linear models; Data mining & Informatics.

Prof. K.C. Yuen BSc, MSc, PhD Calgary; ASA
Insurance Risk Modelling; Financial Risk Analysis; Survival Analysis

Dr. Jianfeng Yao BSc, MSc, PhD Paris XI
Random matrix theory and high-dimensional data analysis: large sample covariance matrices, high-dimensional estimation and testing; Inference for stochastic processes: non-linear time series and Markov-switching processes; Image analysis and understanding using Markovian spatial models: image segmentation, motion analysis and tracking.

Dr. Philip L.H. Yu BSc, PhD HK
Data Mining and Machine Learning; Ranking Methods; Financial Data Mining; Risk Management; Environmental Statistics

Dr. Gilbert C.S. Li MScScSc, Birm, MPhil CUHK, PhD HK
Time Series Analysis; State-space Modelling; Environmental Statistics; Financial Time Series and Econometrics

Dr. Louis F.K. Ng BA HK; MSc Br. Col, PhD Tor; FSA, CFA
Asset Liability Management; Enterprise Risk Management; Insurance Pricing Models; Pension Projection Models; Regression Analysis

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