BACHELOR OF SCIENCE

Major in Statistics
Major in Decision Analytics
Major in **STATISTICS**

STATISTICS addresses an important human endeavour...

*a desire to make “sense” of observations*

STATISTICAL REASONING
THE LANCET
The relationships between democratic experience, adult health, and cause-specific mortality in 170 countries between 1980 and 2016: an observational analysis
### Predicting Oscar winners

<table>
<thead>
<tr>
<th>Year</th>
<th>Winner</th>
<th>Probability</th>
<th>Predicted</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1948</td>
<td>Hamiet</td>
<td>0.01</td>
<td>Johnny Belinda</td>
<td>0.97</td>
</tr>
<tr>
<td>2004</td>
<td>Million Dollar Baby</td>
<td>0.01</td>
<td>The Aviator</td>
<td>0.97</td>
</tr>
<tr>
<td>1981</td>
<td>Chariots of Fire</td>
<td>0.01</td>
<td>Reds</td>
<td>0.88</td>
</tr>
<tr>
<td></td>
<td><strong>Best Director</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Steven Soderbergh</td>
<td>0.01</td>
<td>Ang Lee</td>
<td>0.95</td>
</tr>
<tr>
<td>1968</td>
<td>Carol Reed</td>
<td>0.02</td>
<td>Anthony Harvey</td>
<td>0.97</td>
</tr>
<tr>
<td>1972</td>
<td>Bob Fosse</td>
<td>0.03</td>
<td>Francis Ford Coppola</td>
<td>0.96</td>
</tr>
<tr>
<td></td>
<td><strong>Best Actor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>Denzel Washington</td>
<td>0.00</td>
<td>Russell Crowe</td>
<td>0.99</td>
</tr>
<tr>
<td>1968</td>
<td>Cliff Robertson</td>
<td>0.00</td>
<td>Peter O’Toole</td>
<td>0.88</td>
</tr>
<tr>
<td>1974</td>
<td>Art Carney</td>
<td>0.02</td>
<td>Jack Nicholson</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td><strong>Best Actress</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>Nicole Kidman</td>
<td>0.07</td>
<td>Renée Zellweger</td>
<td>0.90</td>
</tr>
<tr>
<td>1985</td>
<td>Geraldine Page</td>
<td>0.07</td>
<td>Whoopi Goldberg</td>
<td>0.70</td>
</tr>
<tr>
<td>1950</td>
<td>Judy Holliday</td>
<td>0.09</td>
<td>Gloria Swanson</td>
<td>0.76</td>
</tr>
</tbody>
</table>
One Twin Committed the Crime — but Which One?
A New DNA Test Can Finger the Culprit
A handful of criminal prosecutions have stalled because DNA tests cannot distinguish between suspects who are twins. Then scientists decided to create one.
Different languages, similar encoding efficiency: Comparable information rates across the human communicative niche
Examples of applications

Focus article

Computer vision, archaeological classification and China's terracotta warriors
A public data set of spatio-temporal match events in soccer competitions

Examples of applications

Napoli (0)  connectivity = 14.74
Juventus (1)  connectivity = 19.89
Aliens may not exist – but that’s good news for our survival

A new study suggests that we could well be on our own in the universe. Yet loneliness might have its advantages.
The run-up to the global financial crisis:
A longer historical view of financial liberalization, capital inflows, and asset bubbles
Examples of applications

Some days are more equal than others?
China, covid-19, 2020, new confirmed cases, by day

Hubei province

- New party leadership in Hubei and Wuhan
- Guidelines rescinded

All provinces, excluding Hubei

- Zhejiang province announces 335 new clinics and backup hospital
- Shandong provincial justice department chief removed
- Xi Jinping speech to the politburo

Source: China’s National Health Commission

The Economist
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)
Major in Risk Management vs Major in Statistics

- **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 Statistics & Risk Management

- For detailed curriculum structure, please refer to

Major in **DECISION ANALYTICS**

**DECISION ANALYTICS**

addresses decisions for modern human ...

**a desire to make sense of “big data”**
Netflix movie-rating challenge

Examples of applications

Movie-rental company

17,770 movies

480,189 customers

How to predict missing ratings of customers?
Examples of applications involved many statistical techniques, of which most important is SVD (Singular Value Decomposition).
Background adequate?

- For Mathematics, 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; Sequences, series; Basic calculus; Vectors, matrices.*

- For computer science, to enroll in COMP2119, students must also take

  **COMP2113 Programming Technologies and Tools**
Major in Decision Analytics vs Major in Statistics / Risk Management

- Heavier emphasis on **COMPUTER SCIENCE + MATHEMATICS**

- Students **CANNOT** double major in Decision Analytics and Statistics, Risk Management, Computing & Data Analytics, Computer Science

- Students **CANNOT** major in Decision Analytics and minor in Statistics, Computer Science

- The detailed curriculum structure can be found at Faculty website:
  
BACHELOR OF SCIENCE

Major in Statistics
Major in Decision Analytics

your attention please…
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
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 C W KWAN**
<ckwan@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*
Contact Persons

■ Co-ordinators
  – Stephen Lee (Statistics)
  – Y Cao (Decision Analytics)

■ Course Selection Advisors
  – Dora Zhang
  – K Zhu

■ Tel: 3917 2466

■ Email: ug_enquiry@saas.hku.hk