Overview of and Collaboration with Hong Kong University of Science and Technology

Chak K. Chan
Division of Environment
About HKUST: History

- Sept 1988  Founding President (CW Woo)
- Nov 1989  Construction began
- Aug 1991  Phase I construction completed
- Oct 1991  Official Opening
- Nov 1993  First graduation with 66 MS
- Sept 1996  Full size reached
- Sept 2001  Second Phase (Paul Chu)
- Sept 2005  Strategic Plan: Vision 2020
- Sept 2009  3rd President (Tony Chan)
- 2011       Strategic Plan: 2011 – 16
- 2011       20th Anniversary
## About HKUST: World Rankings 2011

### Youngest of the World Top 100 Universities

<table>
<thead>
<tr>
<th>HKUST</th>
<th>No. 1</th>
<th>World’s Top 200 Asian Universities</th>
<th>QS Asian University Rankings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. 40</td>
<td>World’s Top 200 Universities</td>
<td>QS World University Rankings</td>
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<td>No. 62</td>
<td>World’s Top 200 Universities</td>
<td>Times Higher Education World University Rankings</td>
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<tr>
<td>SSCI</td>
<td>No. 15</td>
<td>Life Science &amp; Biomedicine</td>
<td>QS Asian University Rankings</td>
</tr>
<tr>
<td>SENG</td>
<td>No. 22</td>
<td>Engineering &amp; Technology</td>
<td>QS World University Rankings</td>
</tr>
<tr>
<td></td>
<td>No. 1</td>
<td>Engineering &amp; Technology (in Hong Kong)</td>
<td>QS World University Rankings</td>
</tr>
<tr>
<td>SBM</td>
<td>No. 1</td>
<td>EMBA</td>
<td>Financial Times EMBA Ranking</td>
</tr>
<tr>
<td></td>
<td>No. 10 (2012)</td>
<td>MBA</td>
<td>Financial Times MBA Ranking 2012</td>
</tr>
<tr>
<td>SHSS</td>
<td>No. 1</td>
<td>Social Science (in Greater China)</td>
<td>Academic Ranking of World Universities by Shanghai Jiao Tong University</td>
</tr>
</tbody>
</table>
Faculty: 100% with doctorate degree

2011 QS International Faculty Index: Score 100 (Top 10 in the world)

80% are from the following universities:

- Caltech
- Stanford
- Cambridge
- Carnegie-Mellon
- Chicago
- UC Berkeley
- Columbia
- Cornell
- UCL
- USC
- Toronto
- London
- Michigan
- MIT
- UCLA
- Northwestern
- Oxford
- Imperial
- Washington
- Wisconsin
- Harvard
- Princeton
- Illinois
- Purdue
- Yale
- UBC
About HKUST: Internationalization - Students

- 2011 QS International Student Index: Score 98.6 (Ranked 26th in the world)
- Global Partnership: Over 200 Exchange Partners worldwide
- Average 30% of undergraduate students have 1 semester of exchange before graduation — aiming for 50% in three years
- Around 500 exchange students enjoy on-campus accommodation
- Student diversity in citizenships: 56 citizenships

Austria
Bangladesh
Benin
Botswana
Brazil
Cambodia
Cameroon
Canada
Chile
Columbia
Czech Republic
Denmark
Ecuador
Estonia
Finland
France
Germany
India
Indonesia
Israel
Italy
Jamaica
Japan
Kazakhstan
Kenya
Korea
Kuwait
Lithuania
Luxembourg
Malaysia
Mexico
Myanmar
Nepal
Netherlands
Nigeria
Norway
Pakistan
Philippines
Poland
Russia
Saudi Arabia
Singapore
Spain
Sri Lanka
Sweden
Switzerland
Taiwan
Tanzania
Thailand
Tunisia
Turkey
United Kingdom
United States
Uruguay
Vietnam
Zimbabwe
HKUST 5-Year Strategic Plan (2011-16)
Focused elite research university; excels in science, technology, and business, supported by the humanities.

International, whilst having important connections with Mainland China.

Interdisciplinary studies, well-rounded education, nurturing of strong entrepreneurial spirit and innovative thinking—all necessary foundations and skills for the changing world.

Institute for Advanced Study: Global premier intellectual hub, center of research breakthroughs, incubator of thought leaders.

Spectacular physical setting – environment for intellectual and academic excellence.
EVMT 3-Year Curriculum

Year 1
- Statistics
- Calculus
- Env. Sci
- Sustainable Development
- Organizational Behavior
- Green Communication

Study Trip/Intern
- Climate Change
- Microeconomics
- Finance
- Elective
- Green Communication

Year 2
- Env. Tech.
- Energy
- Env. Law
- Electives
- Business Communication
- Green Business
- Environmental Economics
- Electives
- Corporate Env. Acct. & Reporting
- Capstone Project
- Seminar
- Electives

Year 1
- Green Business
- Environmental Economics
- Electives
- Capstone Project
- Seminar
- Electives

EVMT Electives

<table>
<thead>
<tr>
<th>Understanding Society</th>
<th>Ecology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contemporary Hong Kong: Government &amp; Politics</td>
<td>Biodiversity</td>
</tr>
<tr>
<td>China’s Sustainable Development</td>
<td>Environmental Geographical Information System</td>
</tr>
<tr>
<td>Environmental Impact Assessment</td>
<td>Green Innovation &amp; Entrepreneurship</td>
</tr>
<tr>
<td>Chemical Process Principles</td>
<td>Business Project Management</td>
</tr>
<tr>
<td>Product Design and Lifecycle Management</td>
<td>Managerial Leadership</td>
</tr>
</tbody>
</table>
EVMT Study Trip I

- Area: Pearl River Delta
- Period: Summer break
- Duration: 3 Days
- Visiting locations (e.g.):
  1. Daya bay nuclear power plant: Energy issue
  2. Waste water treatment plant: Waste treatment technology
  3. Zhujiang brewery: Water reuse in the industry
  4. Local visit: Sustainable development
Academic and Professional Development

• Students led discussions:
  – Incineration facility in HK
  – Ching Ming: Environmental Disaster?

• Invited speaker talks:
  – A co-founder of a social enterprise:
    Miss Serrie Fung; Synergy Social Ventures
  – A French landscape architect:
    Ms. Marie Clotilde de Bonfils
  – An engineer from a power company:
    Mr. Raymond Sze; CLP Holdings Ltd.
  – An environmental economist:
    Dr. Luke Brander

• Discussion after attending a book talk:
  – “Consumptionomics: Asia’s role in reshaping capitalism and saving the planet” by Mr. Chandran
ENVR 3900: Internship/Service Learning

Internship opportunities of EVMT students

• Crystal Group (Garment Manufacturer)
  – Designed an eco-practice checklist
  – Prepared the annual sustainability report
  – Organized sustainability workshops

• Swire Properties Limited (Property Management)
  – Involved in the sustainability project for hotels
  – Organized activities to promote sustainability at workplace

• World Wildlife Fund (NGO)
  – Prepared a report for promoting green information and communication technology

• PricewaterhouseCoopers (PwC)
  – Sustainability projects like carbon footprint
ENVR 3900: Internship/Service Learning

Volunteering service

• The Northern Guangdong Service Learning and Cultural Inspiration Tour (Education Development Program, HKUST)
  – Teach in a primary school of in Shaoguang; China
  – Visit village in remote area

• Hospital volunteer scheme (Hong Kong Baptist Hospital)
  – Organize activities for children in the pediatrics wards
  – Conduct a survey regarding to the hospital service
Exchange Opportunities

• A number of EVMT students have been/will be exchanged to different countries:
  – China
    • Peking University
  – United Kingdom
    • University of Exeter
    • University of East Anglia
  – United States
    • Rutgers, The State University of New Jersey
  – Sweden
    • Chalmers University of Technology
Competitions

• **Green Innovation and Entrepreneurship Competition**
  – Organizer: HKUST
  – Each team have one faculty advisor.
  – Deliverables: A proposal including description of the product or service being offered, market analysis, business model, projected financials, sales and marketing ....

• **Eco-Business Innovation Award 2011-12**
  – Organizer: Interdisciplinary Programs Students’ Union and Environment Student Society (EVSS)
  – Deliverables: A commercial video, an eco-business proposal and a presentation
Research Focus

• Atmospheric science and air pollution
• Oceanic science and water pollution
• Climate change adaptations
• Sustainability
## HKUST Air Quality Research Supersite

<table>
<thead>
<tr>
<th><strong>Module Name</strong></th>
<th><strong>Component</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical</strong></td>
<td>Polarization Lidar</td>
</tr>
<tr>
<td>Characterization</td>
<td>Scanning Mobility Particle Sizer System</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td>Fast Mobility Particle Sizer Spectrometer</td>
</tr>
<tr>
<td></td>
<td>Cloud Condensation Nuclei counter</td>
</tr>
<tr>
<td></td>
<td>Humidified tandem differential mobility analyzer (HTDMA)</td>
</tr>
<tr>
<td><strong>Chemical</strong></td>
<td>Real-time EC/OC analyzer</td>
</tr>
<tr>
<td>Characterization</td>
<td>Real-time Particle-Into-Liquid Ion Chromatography</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td>Real-time VOC analyzer</td>
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<tr>
<td></td>
<td>High resolution aerosol mass spectrometer</td>
</tr>
</tbody>
</table>
Collaborations with the HKEPD

<table>
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<th>Component</th>
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<tr>
<td><strong>Physical</strong></td>
<td></td>
</tr>
<tr>
<td>Characterization System</td>
<td>Nephelometer</td>
</tr>
<tr>
<td></td>
<td>Beta gauge (EPD)</td>
</tr>
<tr>
<td><strong>Chemical</strong></td>
<td></td>
</tr>
<tr>
<td>Characterization System</td>
<td>Criteria gases and CO2 analyzers</td>
</tr>
<tr>
<td></td>
<td>Aethelometer</td>
</tr>
<tr>
<td></td>
<td>GC-based VOC analyzer × 2 (EPD)</td>
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<tr>
<td></td>
<td>MARGA (EPD)</td>
</tr>
</tbody>
</table>
ECF project on PM Supersite

• What are the sources of PM (PM2.5, PM10)?
• What controls the abundance and the formation of PM spatially and temporally?
• What are the levels of exposure by the public to traffic-related PM?
• How does PM affect visibility over the South China region?
MAP on media

CNN

Sport  Cricket: Bravo's 4-wickets gives West Indies edge
Research to Policy

- Review of Hong Kong Air Quality Objectives
- ‘Fair Winds Charter’ – marine vessel emission
- Urban climatic map
Thank you!