

Welcome to the

# Environmental Science Major

6901 Bachelor of Science

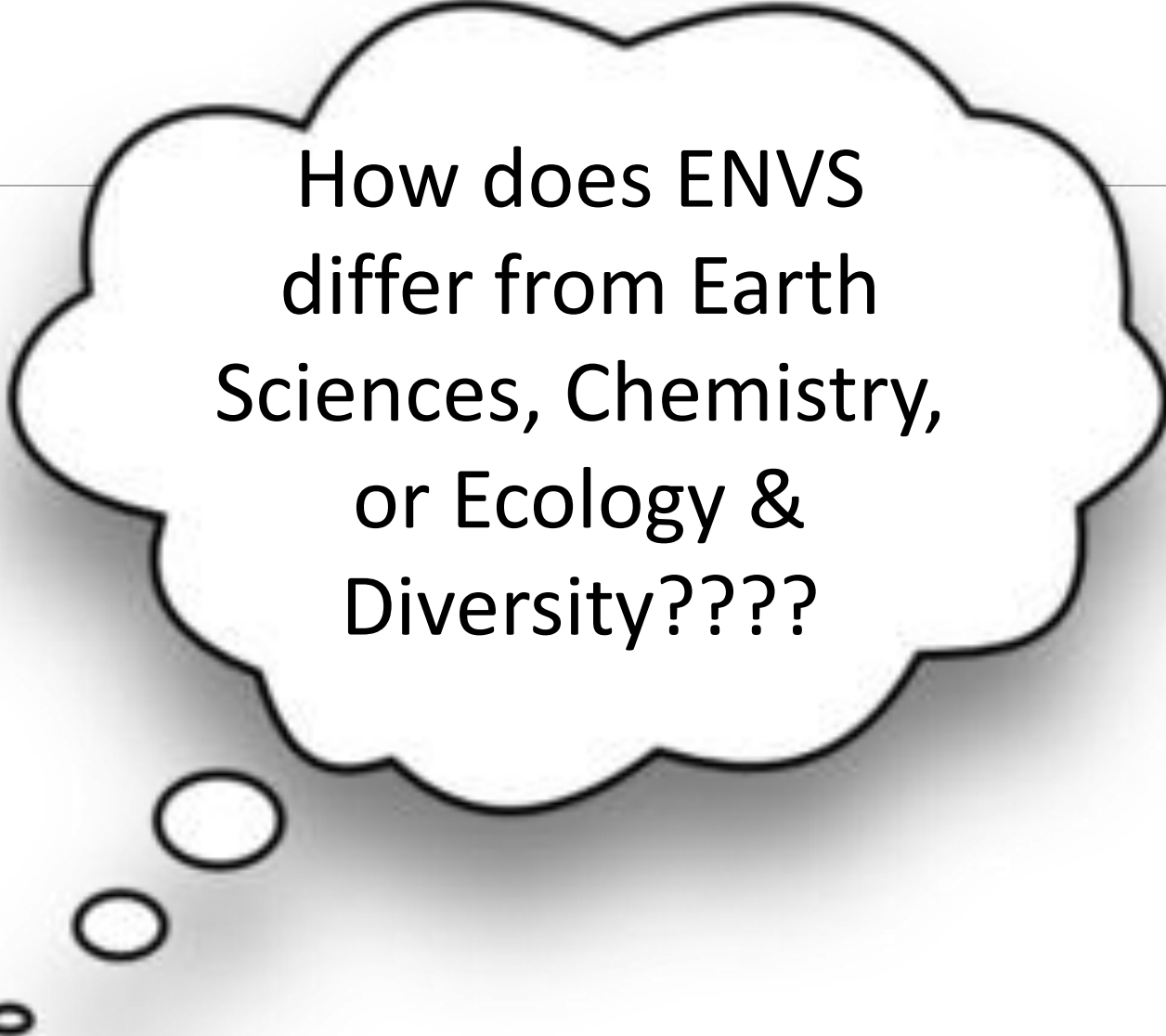


# What is Environmental Science?

An interdisciplinary approach to studying and finding solutions for environmental problems relevant to everyday life.

Integrates physical, biological and information sciences.

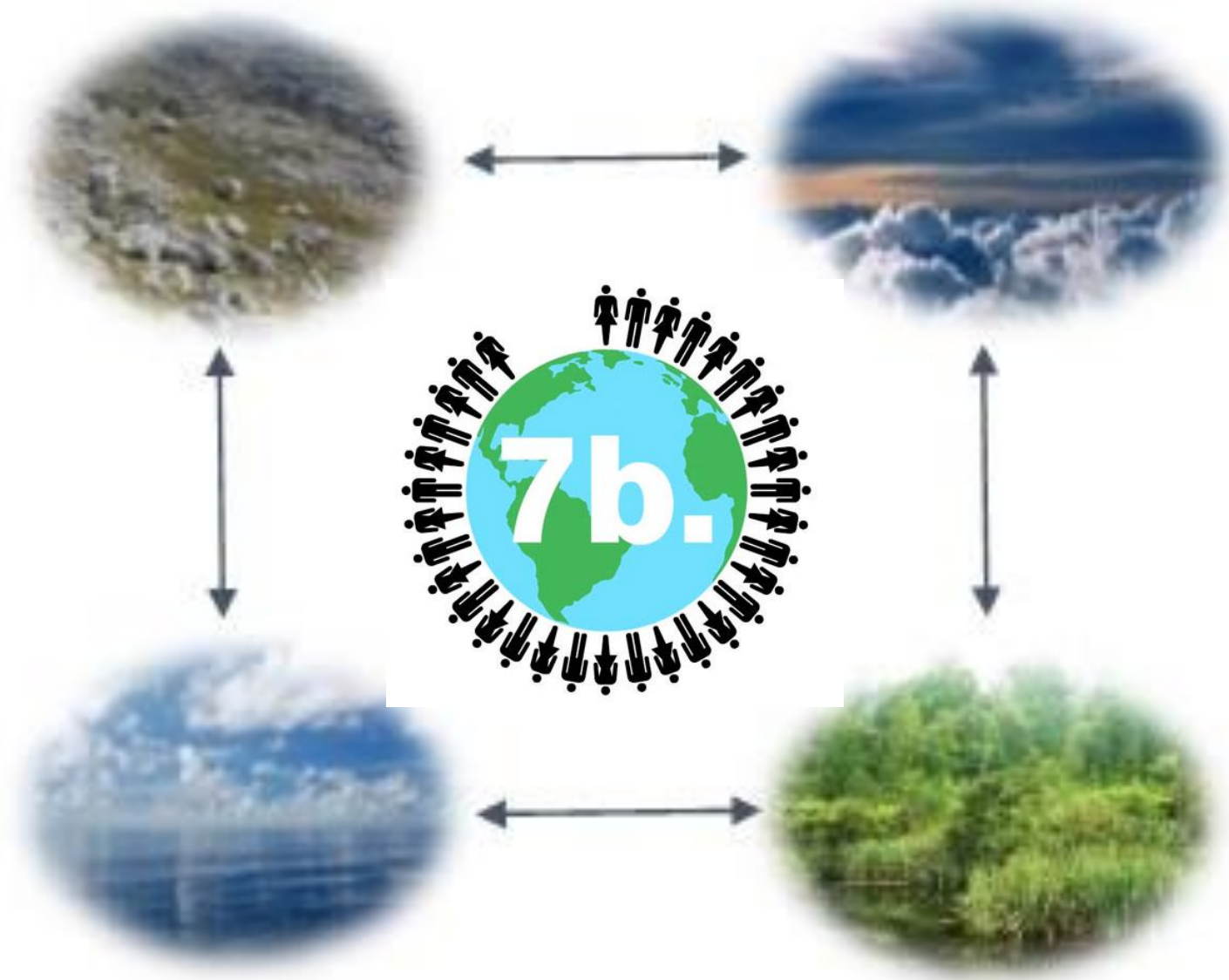


A large, white, cloud-shaped thought bubble with a black outline is centered on the page. It has a soft drop shadow. Three smaller circles of increasing size lead from the bottom left of the bubble towards the main bubble. A thin horizontal line passes behind the bubble.

How does ENVS  
differ from Earth  
Sciences, Chemistry,  
or Ecology &  
Diversity????

LITHOSPHERE

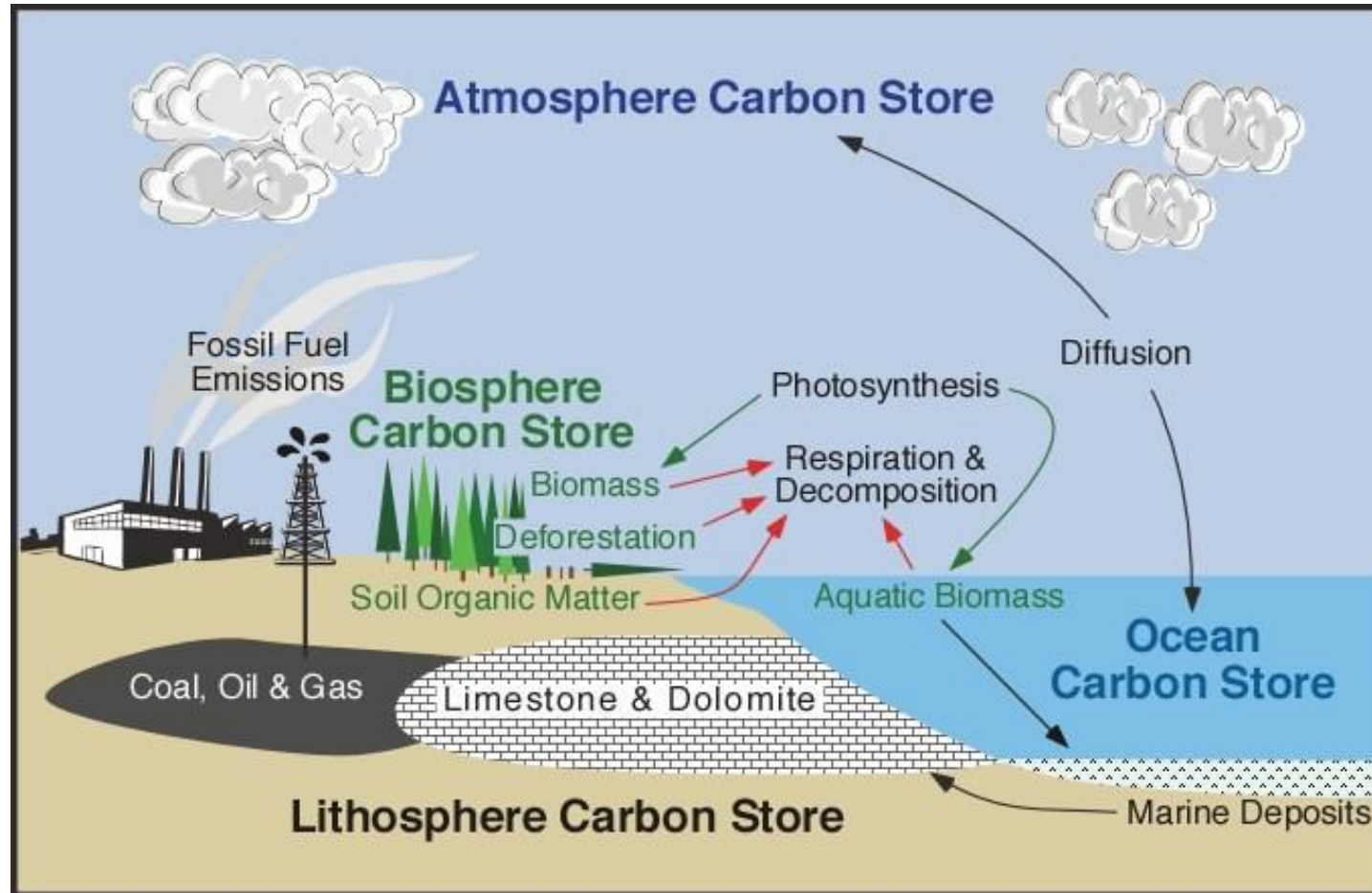
ATMOSPHERE



HYDROSPHERE

BIOSPHERE

# Why do I need to study chemistry, earth science and ecology?



# Why study ENVS in Hong Kong?

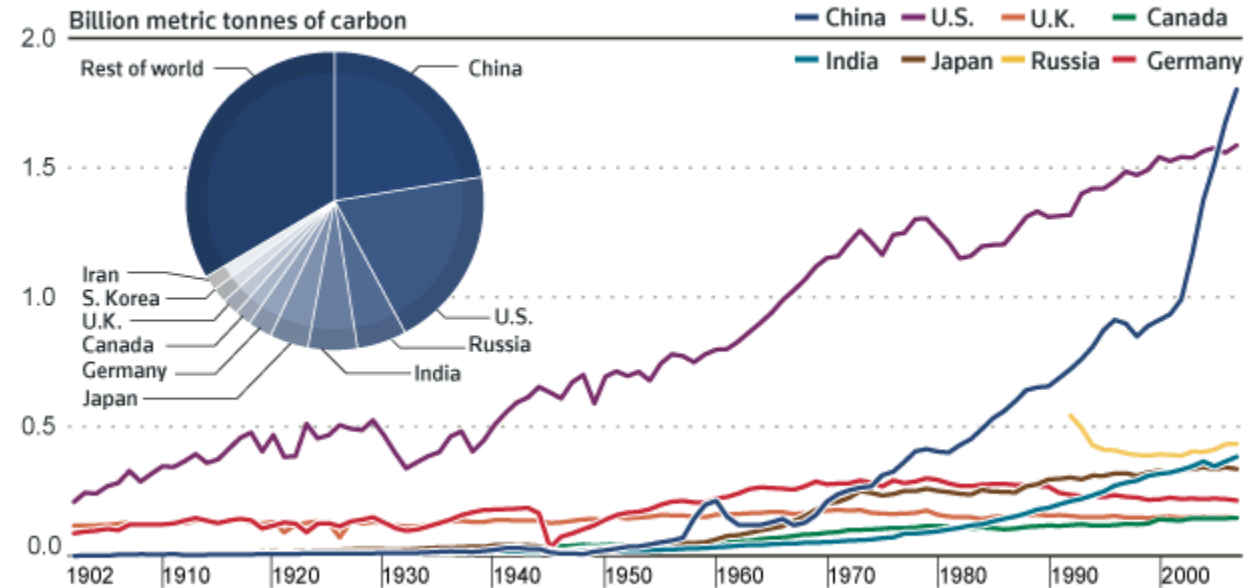
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# Why study ENVIS in Hong Kong?



## World carbon emissions



## Coughing much? Hong Kong suffers bigger rise in poisonous ozone pollution than industrial Guangdong

But environmental campaigners say

## Rubbish effort: Hong Kong environment bureau slammed for slow work on food waste disposal

Audit Commission calls for more timely action as landfills face increased pressure

## Climate change could see half a reservoir of Hong Kong's potable water evaporate per year, green group says

Global warming might cause 7.3 million litres of water to evaporate the turn of the century

## Kwai Chung and nearby container port get less sulphur pollution after start of fuel law

Kwai Chung district, known for ship pollution, records less sulphur dioxide after fuel law

## Exposed: the illegal coral reef fish

Despite more than 1,000 counts of illegal fish according to official records, experts say

## Country park living: Build homes on 'low eco value' Hong Kong parks, suggests Chief Executive CY Leung

Chief executive's comments come a day after major think tank makes the same suggestion



*“Climate change skeptics might not like to admit it, but Asia is embracing environmentally-friendly technologies.”*

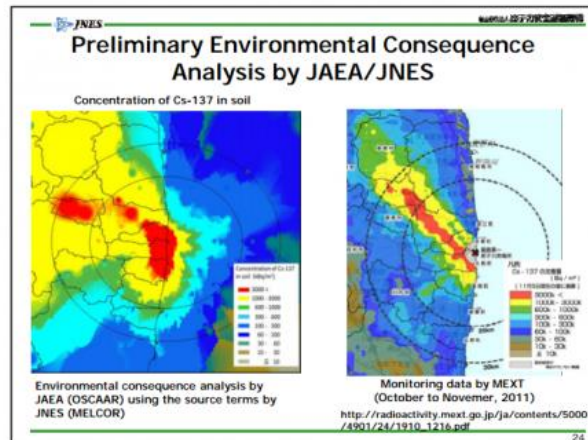
*- BBC, March 2011*



# What does an Environmental Scientist do?



Collect and analyse environmental data



Report scientific and technical information



Use data to influence policy, laws and behavioural change



# Career Prospects

U.S. Bureau of Labor Statistics (BLS) - Environmental Science jobs will grow by 25% in the next decade!



- \* Environmental consultant
- \* Financial analyst
- \* Environmental laboratories
- \* Environmental professional
- \* Academic research

- \* Education/outreach
- \* Environmental chemist
- \* Conservation Organization
- \* Alternative technology
- \* Planning

# Recently hired HKU graduates:

- Government
- NGOs
- Private companies
- Academic
- Conservation & Sustainability
- Environmental Consultants



**Environmental Protection Department**

The Government of the Hong Kong  
Special Administrative Region

**THE PENINSULA**  
HOTELS



**BUSINESS  
ENVIRONMENT  
COUNCIL**  
商界環保協會



**AECOM**

# Environmental Science @ HKU

A broad-based education

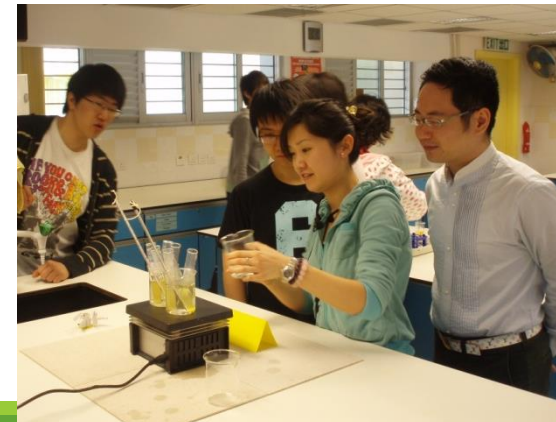
- Emphasis on natural sciences
- Practical field and analytical skills
- Experiential learning
- Communication

Intellectual curiosity

Critical thinking skills

Multiple perspectives

Ability to solve problems



# ENVS Faculty – Biological Sciences



Dr Dingle  
Major Coordinator  
Urban Ecology,  
Wildlife Trade



Dr Baker  
Coral reef biology



Dr Bonebrake  
Climate change;  
urbanization



Dr Thiyagarajan  
Environmental Life  
Science



Dr Gu  
Environmental Toxicology  
+ Microbiology



Dr Mumby (SBS/Social Science)  
Environmental Policy



Dr Yasuhara  
Paleoclimate: marine  
ecosystems

# ENVS Faculty – Earth Sciences, Chemistry, Physics & Social Science

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Dr Not  
Climate change,  
Plastic Pollution



Dr Thibodeau  
Geochemistry,  
Pollution



Dr Liu  
Climate change



Professor Zong  
Climate change



Professor Djurišić (Physics)  
Sustainable Energy

# Introductory level courses – (48 credits)

## Science Foundation Courses (12 credits)

- \*Scientific Methods and Reasoning
- \*Fundamentals of Modern Science

## ENVS Courses (18 credits)

- \*Introduction to Environmental Science (Year 1)
- \*Environmental Field and Lab Course (Year 2)
- \*Environmental Data Analysis (Year 2)
- \*Chemistry (Year 1 or 2)

## Elective courses (18 credits)

- \*Ecology (Environmental Life Science, Ecology and Evolution)
- \*Earth Science (Blue Planet, Introduction to Climate Change)



# Advanced level courses (42 credits)

**\*ENVS3004 *Environment, society and economics***

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Plus at least 36 credits of other electives

Climate Change



Urban Ecology



Pollution



# Capstone Requirement – Final year



Environmental Science  
Project or Directed  
Studies



Environmental Science Internship



**Prerequisite: pass at least 4  
advanced ENVS courses**

# ENVS Minor

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## Introductory courses (3 courses)

- **ENVS1401**
- 2 electives

## Advanced courses (4 courses)

- **ENVS3004 Environment, Society & Economics**
- 3 electives



# Research Opportunities



Contents lists available at [ScienceDirect](#)

Behavioural Processes

journal homepage: [www.elsevier.com/locate/behavproc](http://www.elsevier.com/locate/behavproc)



## Low frequency dove coos vary across noise gradients in an urbanized environment

Fengyi Guo<sup>a,b</sup>, Timothy C. Bonebrake<sup>a,b</sup>, Caroline Dingle<sup>b,\*</sup>

<sup>a</sup> School of Biological Sciences, University of Hong Kong, Hong Kong

<sup>b</sup> Department of Earth Sciences, University of Hong Kong, Hong Kong



HKU undergraduate student Guo Fengyi, in the field collecting data on the doves

## Students' Corner

### Undergraduate Environmental Science Research Published in Peer-reviewed Journal

An ambitious group of undergraduate students in the Environmental Field and Lab course examined the water quality of Hong Kong's swimming beaches with international standards established by the WHO, and their findings were recently published in a peer-reviewed journal, *Marine Pollution Bulletin*.

The students were trained to utilise essential analytical techniques applied to real-world environmental problems during the course. They learned that Hong Kong's antiquated system of measuring *E. coli* is underestimating health risks to swimmers. Realising the problem, they continued their research for 1 year further on their own time after the course. They investigated whether there was a difference in the outcomes for Hong Kong water quality assessment between using empirical enterococci measurements and using the *E. coli* data from the Hong Kong Environmental Protection Department's monitoring programme. Their data were collected, tested, analysed and the results were recently published in the aforementioned journal.

Their supervisor, Dr David Baker of School of Biological Sciences, The Swire Institute of Marine Science and Department of Earth Sciences, is delighted about their achievements. "I am happy that the University is moving towards a system where teaching and research are not mutually exclusive. To me, undergraduate publication is the ultimate learning outcome," Dr Baker said.

#### The Paper

Pui Kwan Cheung, Ka Lai Yuen, Ping Fai Li, Wai Hing Lau, Chung Man Chiu, Suet Wai Yuen, David M Baker.

"To swim or not to swim? A disagreement between microbial indicators on beach water quality assessment in Hong Kong."  
*Mar Poll Bull* 2015.

DOI:10.1016/j.marpolbul.2015.11.029



▲ Students collecting beach water sample.

## Hear from our Students



Kytie Ka Lai YUEN

2015 BSc graduate (major in Environmental Science)

"Living in an urban city, we tend to forget that we are very much connected to nature and relying on its resources. Hopefully, the new findings can raise public awareness that human health goes hand in hand with environmental protection. From sample collection to experimental design to data analysis, our journey to publishing this article was not smooth though. We encountered unforeseen obstacles and setbacks along the way, but making continuous improvements by trial and error is what makes this a truly fruitful learning experience."

Pui Kwan CHEUNG

2014 BSc graduate (double major in Environmental Science and Geography)  
2014 Exchange study at the University of Edinburgh, UK

2013 Founding member, the Society of Environmental Science, Faculty of Science, HKU  
2011 - 2012 Academic Secretary, Greenwoods, HKUSU



"Publishing the results of an undergraduate research project in a scientific journal was an achievement that I've never thought of! It was indeed a long and difficult journey which would never be completed without the concerted effort by our group members and the support from our supervisor Dr Baker. I believe all the passion that I have in Environmental Science stems from my desire to protect the natural environment. Studying Environmental Science at HKU was the best decision I've ever made in my life. Few things in life are happier than devoting yourself in a subject and a career that you love. Environmental Science didn't make me a fortune, but it made every day of my university life a happy day, and most importantly it made me realise the importance of having the courage to choose a subject that you love, instead of a subject that the society loves."

# Additional Support

- Skills training sessions
- Advice and mentoring
- “HKU Environmental Science Program”



## ENVS Society

- [envshku.wix.com/senvs](http://envshku.wix.com/senvs)
- “The Society of Environmental Science” (FB)



# Student Peer Advisers in 2019-20

Mr LEUNG Keiven (BSc Year 3) & Miss WONG Jolene (BSc Year 3)

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## General roles

- to **offer advice** in relation to academic studies to freshmen; and
- to **facilitate** freshmen's **smooth transition** from secondary to university education

Matching between **Student Peer Advisers (SPAs)** and freshmen starting from 2019-20

You are highly encouraged to contact the following SPAs if you have any questions about your study (their contacts can be found at the Faculty's website)





# Environmental Science

## 6901 Bachelor of Science

Dr Caroline Dingle  
cdingle@hku.hk