



The Chinese University of Hong Kong

# School of Life Sciences

Established 2010 August by joining Biology and Biochemistry Departments, and four other programs of Cell & Molecular Biology, Environmental Science, Food & Nutritional Science, and Molecular Biotechnology.



# Undergraduate Education

## 6 Life Sciences Programmes

- **Biochemistry**
- **Biology (incl. Human Biology)**
- **Cell & Molecular Biology**
- **Environmental Science**
- **Food & Nutritional Sciences**
- **Molecular Biotechnology**





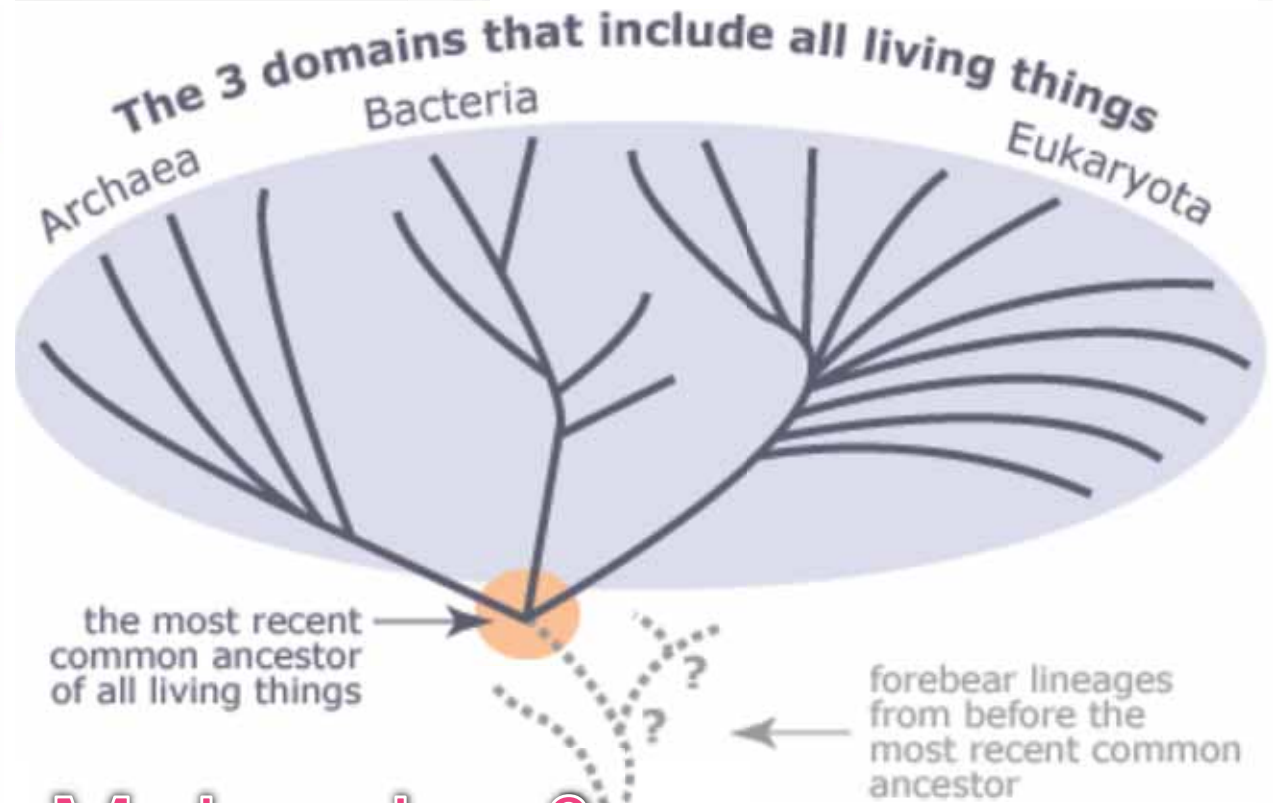
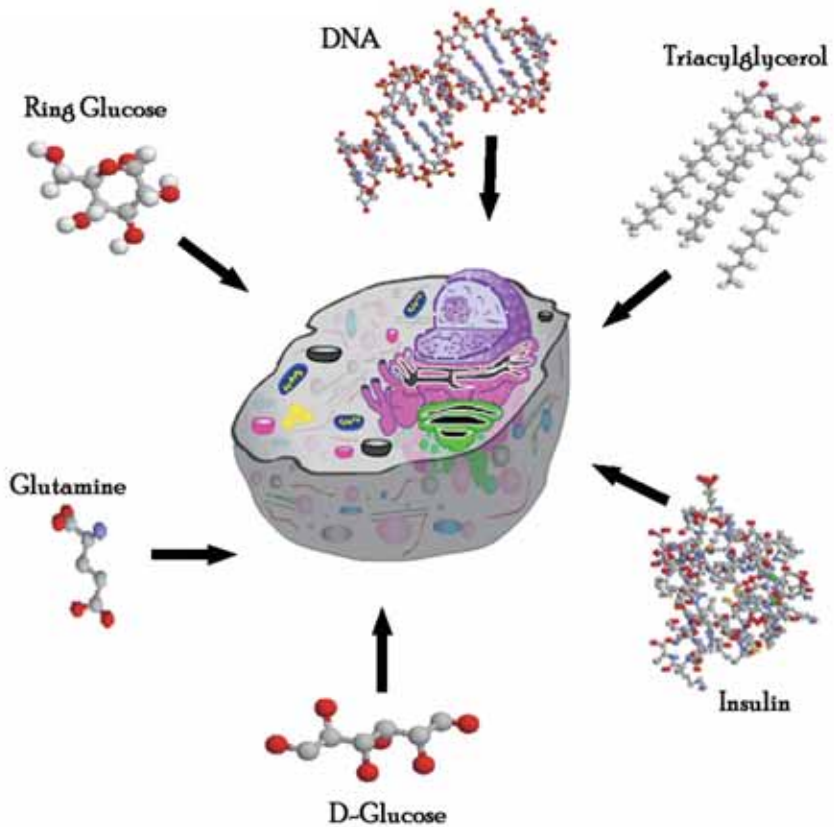
香港中文大學  
The Chinese University of Hong Kong

Food &  
Nutritional  
Sciences

Molecular  
Biotechnology

Environmental  
Science

CMBI  
細胞及分子生物學



Molecular &  
Cell Biology

Biology

Biochemistry

生命科學

Life Sciences



|                                       |   |  |   |   |
|---------------------------------------|---|--|---|---|
| <b>Year 1<br/>Faculty<br/>Package</b> | <b>Biology<br/>Biodiversity</b>                   | <b>Chemistry/Lab<br/>Organic<br/>Chemistry</b> | <b>Physics,<br/>Math, or<br/>Statistics</b> | <b>General<br/>Education<br/>Languages</b>                  |
| <b>Year 2<br/>(Term 1)</b>            | <b>Cell Biology</b>                               | <b>Biochemistry</b>                            | <b>Basic Lab<br/>Techniques</b>             | <b>Scientific<br/>Conduct and<br/>Ethics<br/>(optional)</b> |
| <b>Year 2<br/>(Term 2)</b>            | <b>Introductory<br/>Courses from<br/>Programs</b> | <b>Ecology/Lab</b>                             | <b>Genetics/Lab</b>                         | <b>“Minor<br/>Electives”<br/>Language</b>                   |
| <b>Year 3/4</b>                       | <b>Program Core<br/>Courses</b>                   | <b>Major<br/>Electives</b>                     | <b>Capstone<br/>Courses</b>                 | <b>Minor Courses</b>  |



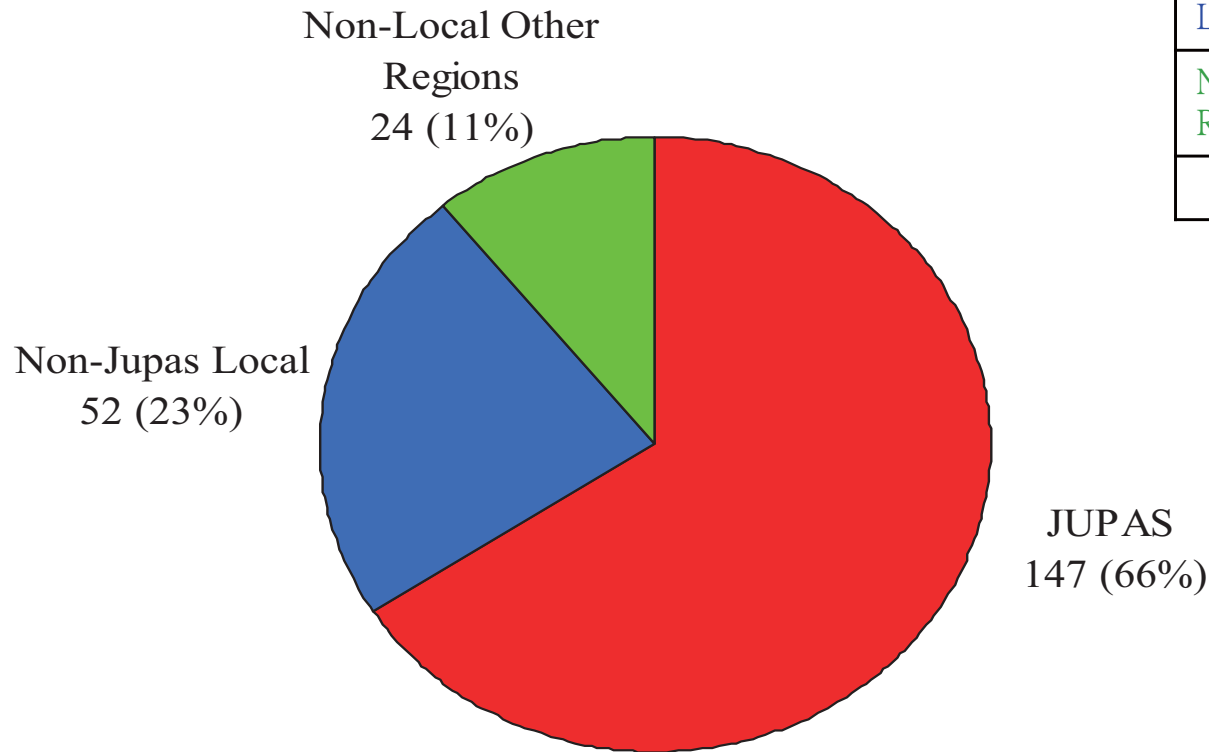
# Undergraduates, 2012-13

CMBI  
細胞及分子生物學

|              | Year 1 | Year 2 | Year 3 | Year 4 or above | Total |
|--------------|--------|--------|--------|-----------------|-------|
| <b>LSCI</b>  | 223    | 35     | 0      | 0               | 258   |
| <b>BCHE</b>  | 0      | 38     | 46     | 10              | 94    |
| <b>BIOL</b>  | 0      | 42     | 28     | 17              | 87    |
| <b>CMBI</b>  | 0      | 8      | 9      | 7               | 24    |
| <b>ENSC</b>  | 0      | 33     | 24     | 6               | 63    |
| <b>FNSC</b>  | 0      | 63     | 80     | 6               | 149   |
| <b>MBTE</b>  | 0      | 7      | 10     | 5               | 22    |
| <b>Total</b> | 223    | 226    | 197    | 51              | 697   |



# 2012 LSCI Ug Intake



|                            |            |
|----------------------------|------------|
| JUPAS S7                   | 147        |
| Non-JUPAS Local S7         | 52         |
| Non-Local Other Regions S7 | 24         |
| <b>Total :</b>             | <b>223</b> |

| Non-local Students |  |
|--------------------|--|
| China              |  |
| Indonesia          |  |
| Japan              |  |
| Korea              |  |
| South Africa       |  |
| Taiwan             |  |

Statistics on new students admitted 2012



**Table 1. Current and potential undergraduate students in SLS programmes**

|              | Year 1<br>(4-year Curr) | Year 2<br>(4-year curr) | Year 2<br>(3-year<br>curr) | Year 3<br>(3-year<br>curr) | Year 4 &<br>above | Total      |
|--------------|-------------------------|-------------------------|----------------------------|----------------------------|-------------------|------------|
| <b>BCHE</b>  | 22 (67)                 | 37 (1)                  | 6* +32                     | 36                         | 6                 | 207        |
| <b>BIOL</b>  | 7 (23)                  | 19 (5)                  | 2* + 38                    | 54                         | 0                 | 148        |
| <b>CMBI</b>  | 1 (13)                  | 16 (3)                  | 6                          | 21                         | 7                 | 67         |
| <b>ENSC</b>  | 0 (20)                  | 20 (4)                  | 41                         | 36                         | 6                 | 127        |
| <b>FNSC</b>  | 25 (48)                 | 59 (15)                 | 75                         | 73                         | 12                | 307        |
| <b>MBTE</b>  | 2 (11)                  | 14 (2)                  | 19                         | 5                          | 6                 | 59         |
| <b>Total</b> | <b>239</b>              | <b>195</b>              | <b>219</b>                 | <b>225</b>                 | <b>37</b>         | <b>915</b> |

Number in brackets denotes Potential Major Students

Figures as at Oct 2013

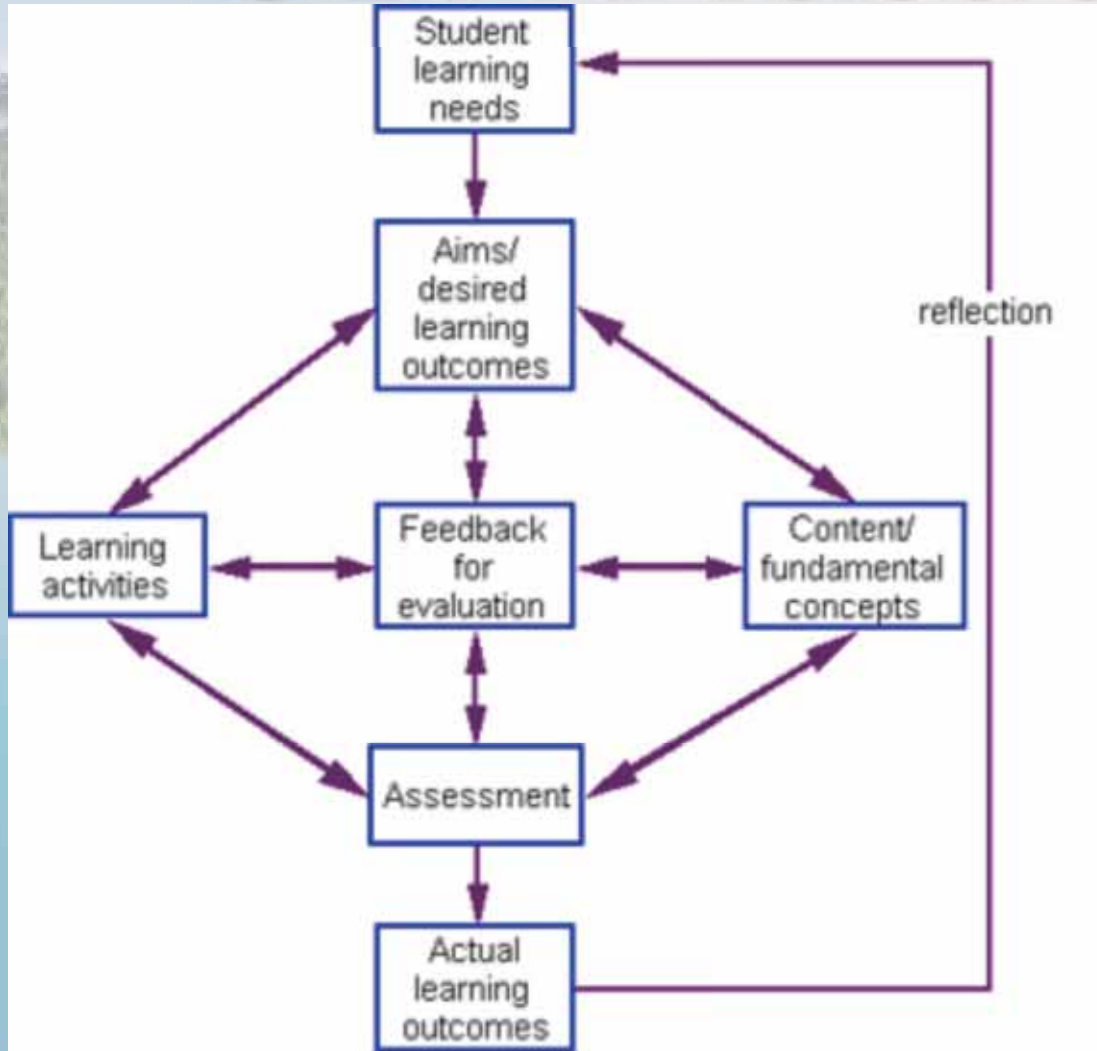
\* denotes Year 1 major (2nd year admission) in 3-year curriculum

335 units of 151 course

Provided to these two cohorts



# OBA Practice in CUHK



**Feedbacks:**

**Curriculum Forum,**

**Course Teaching Evaluation.**

**Staff-Student Consultation Committee**

**Program Committee Meeting**





ENSC  
環境科學

CMBI  
細胞及分子生物學

FNSC

# Revised Bloom's Taxonomy Table

| The knowledge dimension  | The cognitive process dimension |            |       |         |          |        |
|--------------------------|---------------------------------|------------|-------|---------|----------|--------|
|                          | Remember                        | Understand | Apply | Analyse | Evaluate | Create |
| Factual knowledge        |                                 |            |       |         |          |        |
| Conceptual knowledge     |                                 |            |       |         |          |        |
| Procedural knowledge     |                                 |            |       |         |          |        |
| Meta-cognitive knowledge |                                 |            |       |         |          |        |

Assessments  
(Affirmative and Summative with Criteria Referencing):

Assignment, Term Paper, Poster and Oral Presentations, Group Project, Final Examination.



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# Missions

## Professional training:

- ✓ *Concepts and mechanism of biochemical processes.*
- ✓ *Independent research and training on the latest biochemical technology.*

## Personal development skills:

- ✓ *Ability of critical thinking, a proactive and responsible attitude and efficient communication skills.*

JUPAS Code 4757





# Specialization for Different Career Paths

## Biochemistry basic courses

- Fundamentals of Biochemistry
- Frontiers in Biochemistry
- Proteins and Enzymes
- Bioenergetics and Metabolism/Lab
- Methods in Biochemistry/Lab
- Molecular Biology/Lab
- Recombinant DNA techniques

## Biochemistry elective courses

- Clinical Biochemistry
- Aspects of Neurosciences / Lab.
- Molecular Endocrinology
- Medical Biochemistry Lab.
- Basic and Applied Immunology / Lab.
- Biochemistry for Forensic Sciences
- Biochemistry for Sport and Exercises
- Guided Study in Biochemistry
- Supervised Research in Biochemistry

## Clinical / Biomedical Research

- Nutrition and Human Development
- Introduction to Medical Nutritional Therapy
- Human genetics
- Statistical Techniques in Life Sciences

## Biomedical Technology

- Protein Folding, Proteomics
- Animal Biotechnology
- Biochemical Toxicology/Lab
- Statistical Techniques in Life Sciences
- DREAM, iGEM

## Environmental Health

- Environmental Health
- Biochemical Toxicology/Lab
- Methods in Toxicology Research/Lab
- Statistical Techniques in Life Sciences



## Careers of Biochemistry Graduates (2009-12)

| Further Studies | Research | Medical / Pharmaceutical | Education | Commercial | Others (e.g. Government, industrial) |
|-----------------|----------|--------------------------|-----------|------------|--------------------------------------|
| 39%             | 10%      | 5%                       | 10%       | 26%        | 10%                                  |

**Crystal Ng, 2008 graduate  
(Clinical Research Associate)**

I developed my **critical thinking and research sense**. I also learnt to **work in a systemic and efficient** way which is definitely helpful to my career.

**Jenny Hon, 2008 graduate  
(Assoc. Medical Technologist)**

Comprehensive lectures and lab sessions trained me **how to analyze test results critically and equipped me to be a lifelong learner**.

**Luca Lu, 2011 (DPhil student, Cambridge)**  
Study in BCH allowed me to become **a well-trained researcher**. The commitment of all staff set me a good example as scientific pioneer.

**Kelvin Tse, 2013 (MPhil student, CUHK)**  
The BCH curriculum shapes a **all-rounded biochemist with scientific and logical thinking**.

**Tinyi Chu, 2013 (PhD student, Cornell U)**  
I have developed **confidence in dealing with incoming challenging research problems**.



# BIOLOGY PROGRAM

## Our Missions

1. To provide our students with the core knowledge in biological sciences
2. To prepare our students with great competence in understanding biological issues and appreciation of biological knowledge, with awareness in biological conservation and other environmental issues
3. To develop students' generic skills in scientific thinking and communication, problem solving and IT



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# Study Packages

## Human Biology



## Organismic Biology



## Biology for Teaching Career

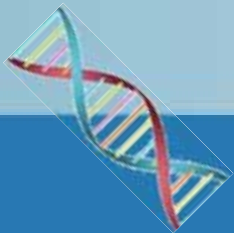


- BIOL3310 Human Biology\*
- BIOL4310 Human Genetics\*
- BIOL4120 Developmental Biology
- BCHE4040 Aspects of Neuroscience
- BCHE4060 Basic and Applied Immunology
- CMBI4101 Cancer Cell Biology
- CMBI4102 Stem Cell Biology
- FNSC3010 Nutrition and Human Development
- FNSC5130 Human Physiology

- BIOL3710 Marine Biology\*
- BIOL4010 Evolutionary Biology\*
- BIOL4012 Field and Environmental Biology
- BIOL4510 Hong Kong Flora and Vegetation
- BIOL3530 Plant Physiology
- BIOL3630 Animal Physiology
- ENSC4260 Conservation Biology

- BIOL3530 Plant Physiology\*
- BIOL3630 Animal Physiology\*
- BIOL4010 Evolutionary Biology
- BIOL 3710 Marine Biology
- BIOL3310 Human Biology or FNSC5130 Human Physiology
- BIOL4120 Developmental Biology
- BIOL4210 Environmental Pollution and Toxicology
- BCHE4010 Molecular Biology or MBTE4320 Genetic Engineering

**BIOLOGY**





## Broadening your Scope in Science

*Biological Sciences, Chemistry & Mathematics/Physics/Statistics*

## Expanding your Knowledge and Understanding of the Unity of Life

*Biochemistry, Cell Biology, Genetics & Ecology*

## Exploring the Diversity of Life

*Vertebrates, Invertebrates, Plants & Microorganisms*

## Specializing in your Area of Interest to fit your Career Plan

*Selection from >20 Major Elective Lecture Courses & 4 Elective Laboratory Courses*

List of Elective Lecture Courses

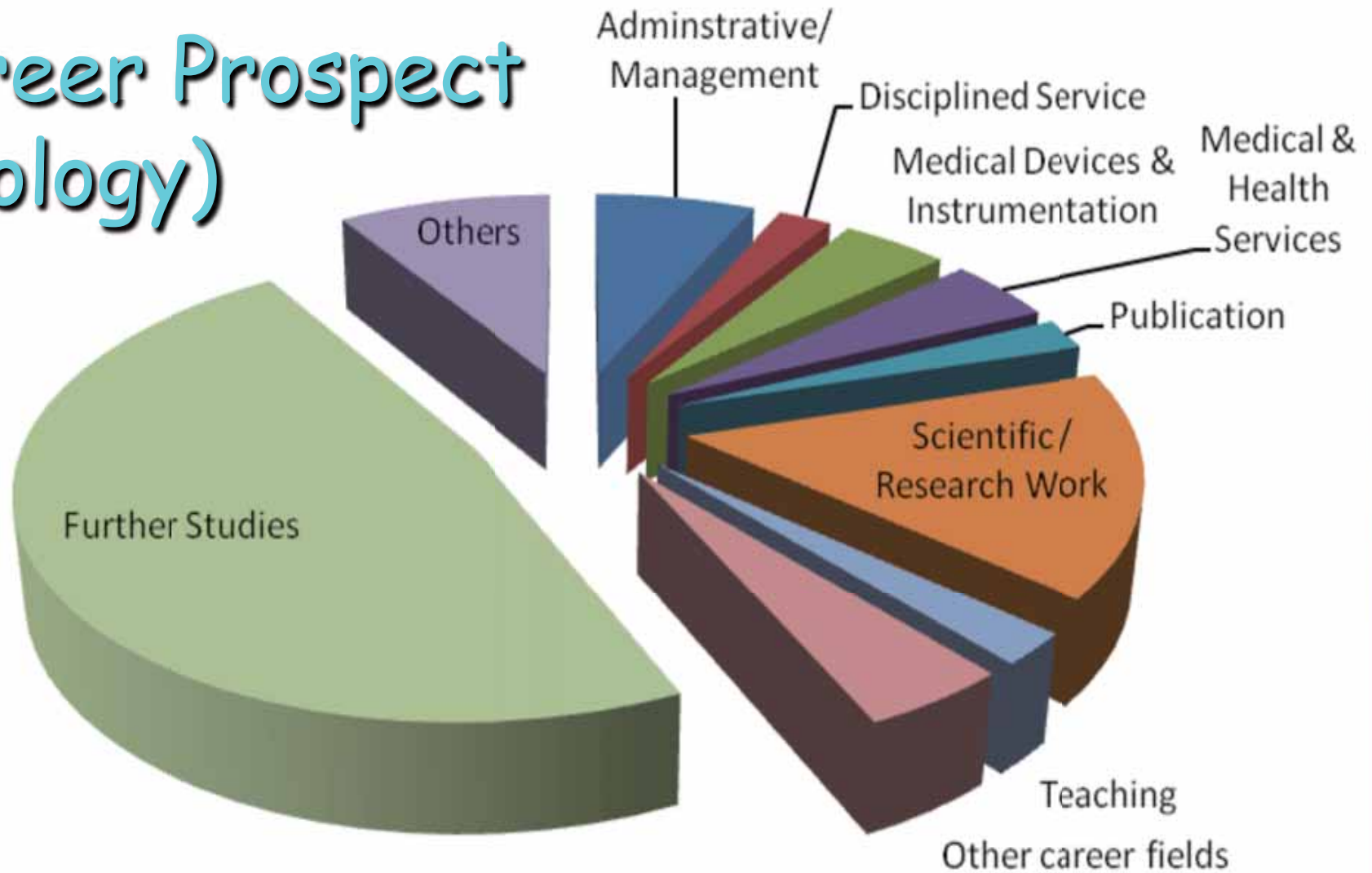
|                            |   |                             |
|----------------------------|---|-----------------------------|
| Animal Physiology          | Marine Biology                          | Genetic Engineering         |
| Plant Physiology           | Hong Kong Flora & Vegetation            | Molecular Biology           |
| Development Biology        | Environmental Pollution & Toxicology    | Environmental Biotechnology |
| Human Genetics             | Conservation Biology                    | Plant Biotechnology         |
| Human Biology              | Statistical Techniques in Life Sciences | Microbial Biotechnology     |
| Evolutionary Biology       | Aspects of Neuroscience                 | Bioinformatics & Proteomics |
| Bioenergetics & Metabolism | Molecular Endocrinology                 | Food Microbiology           |
| Basic & Applied Immunology |   |                             |

## Capstone courses

*Experimental Research / Literature Research in Biology / Internship / Field Study*



# Career Prospect (Biology)



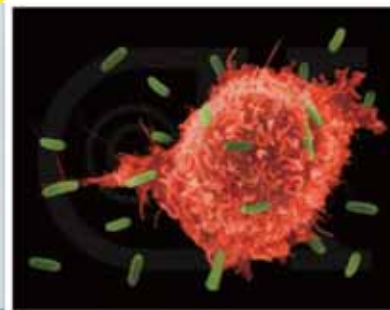
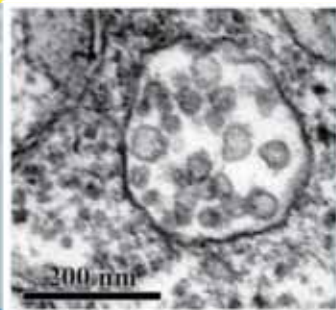




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# Cell & Molecular Biology

- Stem cell biology
- Neuronal cell biology
- Developmental biology
- Cell structure & function
- Bioinformatics



生命科學

Life Sciences



## *To train outstanding personnel with*

**Knowledge in wide aspects**

**Marvelous experimental skills**

**Excellent logic, writing and presentation skills**



**• *Research career in basic life sciences and biomedical sciences***

**• *R&D in biotech Industry***

**• *Teaching career in secondary and tertiary schools***

**• *Career beyond CMB***

**.....**

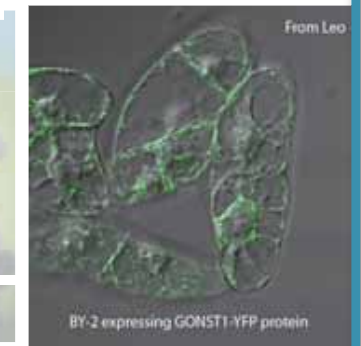
**All-round competence**

# LECTURE

# LABORATORY

CMBI3010 CMB Lab I

CMBI3020 CMB Lab II



## STOT (Student Oriented Teaching)



CMBI2200 Literature survey in CMB & Scientific **Communication**

CMBI3100 Method of **Critical Thinking**

CMBI3200 Proposal Formulation & Creative **Scientific Writing** in CMB

CMBI4901/4902/4903 Final Year Project



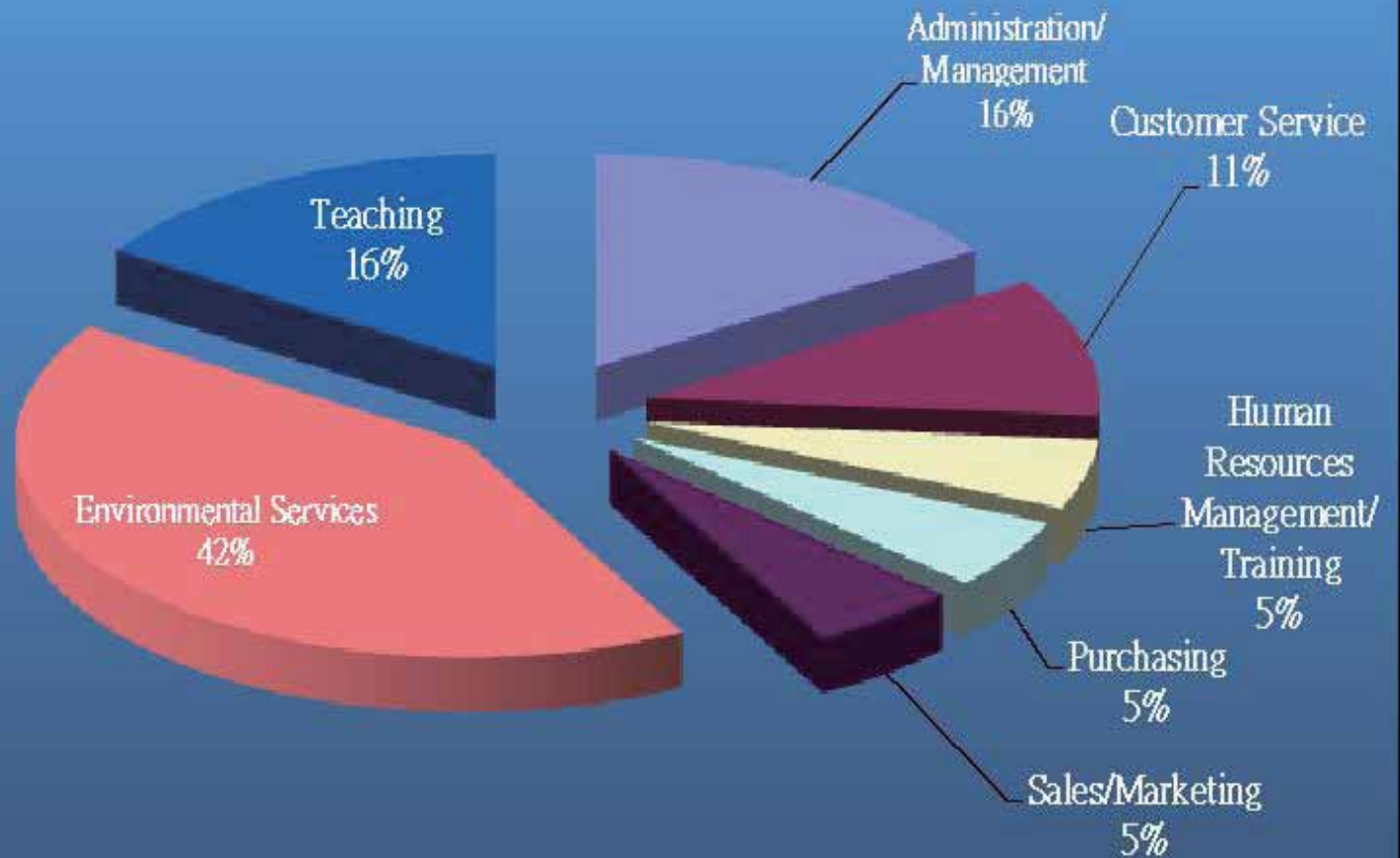
## OUR MISSIONS

1. To provide students with a wide ***multidisciplinary*** background of Environmental Science.
2. To prepare students with a high level of competence in ***scientific understanding*** of various environmental issues.
3. Two concentrations:  
Environmental **Management** and  
Environmental **Technology**.





### Career Field of 2010 Full-time First Degree in Employment of Environmental Science Programme





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# Environmental Science Program

## Requirements

**At least 123 units to graduate**

**University Core Courses\* (39 units)**

\*Chinese & English Language, General Education, Information Technology & Physical Education

**Major Courses (66 units)**

**Other Courses (>18 units)**

**Year 1 Faculty Package (9 units)**

LSCI1002, CHEM 1280 or CHEM 1070 and Any one other faculty package courses from Maths, Physics, Statistics

**Year 2 Core Courses (15 units)**

Biochemistry, Cell Biology, Basic Lab Technique, Scientific Conduct and Ethics; Ecology/Lab; Introduction to Environmental Sciences

**Year 3 Core Courses (15 units)**

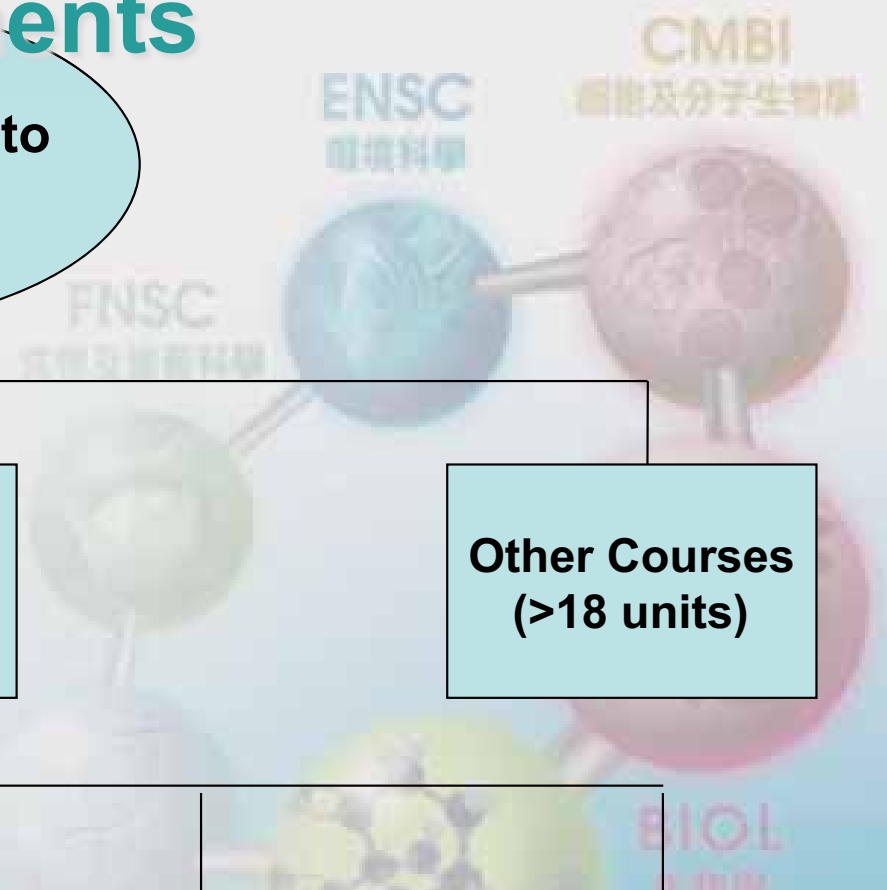
Environmental Chem/Lab Instrumentation/ Lab Environmental & Biochem. Toxicology/Lab Plus elective courses

**Capstone Courses (4 units)**

Internship/Field Study Literature Review Directed Research

**Major Elective Courses (>=23 units)**

Course offered by Biology, Chemistry, Geography & Resources Management, Environ Engineering, Public Health, or Earth System Science





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Field Excursion (2012) at  
Mount Kinabalu (4095.2 M)



Sha Lo Tung Field Study  
in EIA Lab



Tai O Field Trip  
(ENSC2270)



Field Trip in Sabah studying  
wetland mammals there  
(ENSC3001)



Career  
Talk



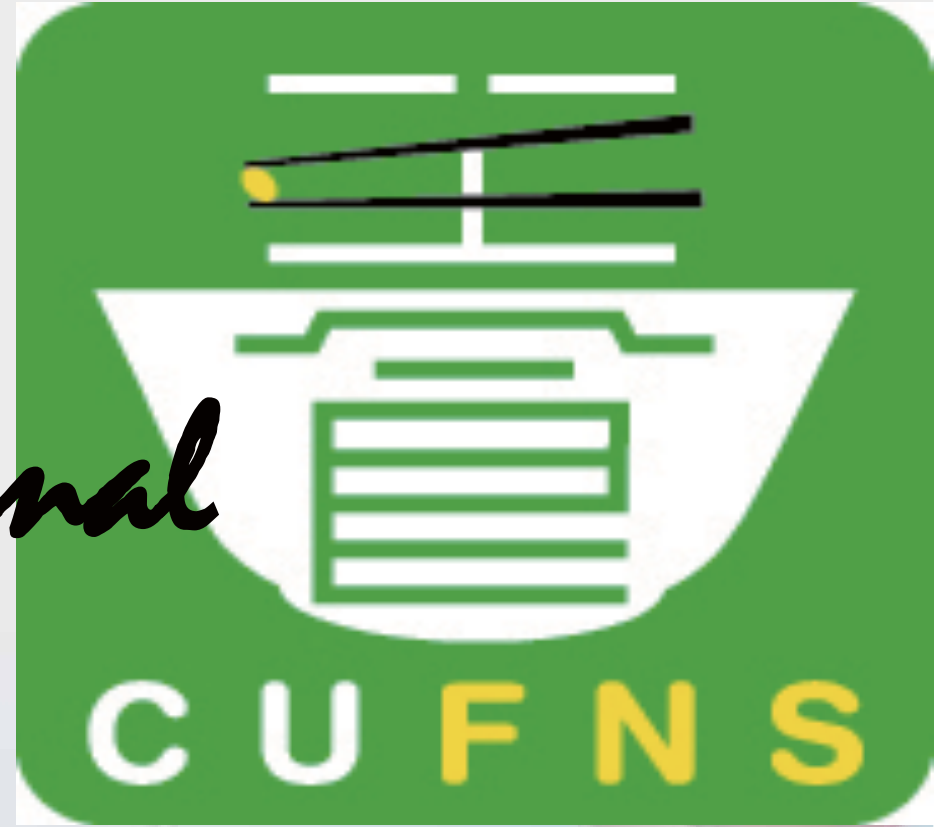
Exchange  
and  
Internship  
Program

Field Trip and Field Study



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# Food & Nutritional Sciences



## Programme Objectives

1. To equip students with in-depth, up-to-date and practical knowledge in Nutrition, Food Science and Technology
2. To devise and implement strategies independently to solve problems related to food and nutrition in technological contexts
3. To prepare students to further their studies and lifelong learning in food and nutrition

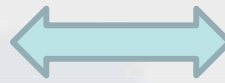
生命科學

Life Sciences





*Nutritional Science*



*Food Science*

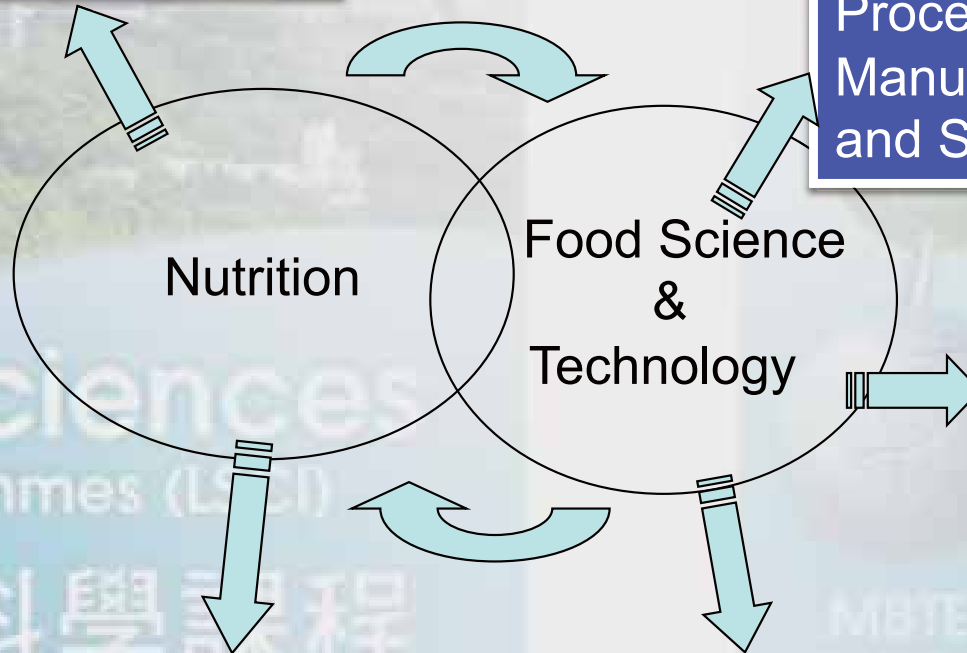
ENSC  
ENSC

# Integration of Food and Nutrition

Individual and Family Health

**Topics**

- Nutrition requirement
- Non-communicable Disease
- Diet Therapy
- Weight Management
- Immunity
- Functional Food
- Traditional Chinese Medicine



Food Processing, Manufacturing and Storage

**Topics**

- Food characteristics
- Food analysis
- Food spoilage
- Food preservation

**Topics**

- Food Safety
- HACCP,
- ISO9000, 22000
- Food Legislation
- Quality Management

Food Quality Control & Safety

**Topics**

- Creation & Development of New Products
- Sensory Evaluation
- Food Biotech: Molecular Biology, Bioprocess Engineering, Microbial Biotechnology

Community Health

Product Development and Production

**Topics**

- Public Health
- Nutrition Education
- Nutrition Policy



## Food Science:

**Food Chemistry & Analysis**  
**Food Technology**  
**Food Product Development  
& Quality Control**  
**Food Microbiology**  
**Food Toxicology and Safety\***

\* Satisfied the requirements of a **food hygiene manager** stipulated by the Food and Environmental Hygiene Department of the HKSAR Government

## Nutritional Science:

- **Nutrition & Human Development**
- **Nutritional Biochemistry**
- **Introduction to Medical Nutrition Therapy**
- **Nutrition Planning & Food Policy**
- **Community Nutrition**
- **Human Physiology**
- **Nutritional Physiology**



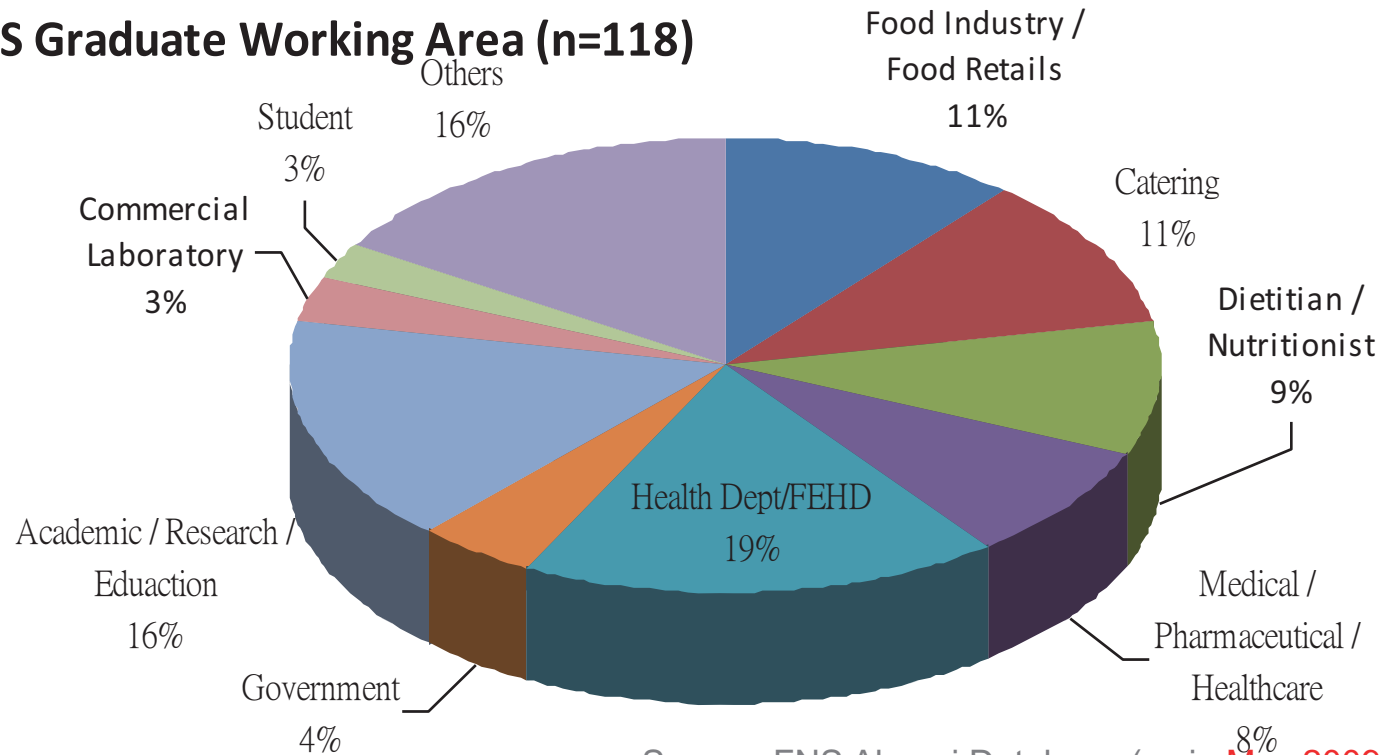
## Food-related Career

- CFS Scientific Officer
- DoH Research Officer
- FEHD Health Inspector
- Food Industry: R & D; QA; Technologist; Marketing
- Testing Lab and Auditing
- Catering and Food Retail

## Nutrition-related Career

- HA Hospital and NGO Registered Dietitian
- Health Care Nutritionist
- Nutrition Consultant
- Medical & Pharmaceutical Product Specialist

FNS Graduate Working Area (n=118)



Source: FNS Alumni Database (as in <sup>8%</sup>May 2009)



# Vision and Mission of MBT

- **Knowledge** – conduct research in **basic science** and **transform** these knowledge to **technologies** to benefit the society.
- **Education** – to train high caliber students who have good knowledge on **state-of-the-art molecular technologies**, good **logical and critical thinking skills**, a **positive attitude** to face future challenges

Life Sciences

生命科學課程

生命科學課程

JUPAS Code: 4757

BCHE  
生物化學



# ***Molecular BioTechnology*** ***Program***



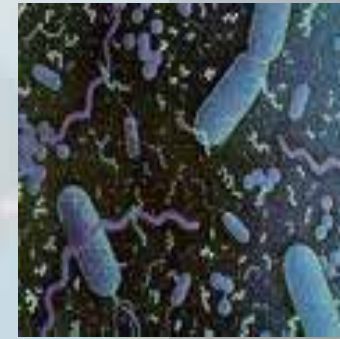
Cell biology and Molecular Biology  
Genetics and Genetic Engineering  
Diversity of Life  
Biochemistry  
Laboratory skills



Animal Biotechnology



Plant Biotechnology



Microbial Biotechnology



# Final Year Project & Summer Internship Program



## Final Year Experimental Project

- **165** project titles given from Professors of School of Life Sciences, School of Biomedical Sciences, Biomedical Engineering, Anatomical & Cellular Pathology (PWH) & overseas institutions

## Summer Internship Program

- **80%** MBT second year students have been selected to local and overseas internship to New York, UK, Spain, Germany & Taiwan in the summer of 2012.





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**Outside of the classroom experiences  
and research opportunity**

**iGEM Competition**

**DREAM Program**

**SMART Program**

**Internship Program**

Life Sciences  
Programmes (LSCI)

生命科學課程

JUPAS Code: 4757

ENSC  
環境及生態科學

CMBI  
細胞及分子生物學

BIOL  
生物學

BCHE  
生物化學

生命科學

Life Sciences



香港中文大學  
The Chinese University of Hong Kong



# Our iGEM teams won prizes

In collaboration with  
Faculty of Engineering



Team work

Innovative

All round  
presentation and  
communication skills

生命科學

Life Sciences



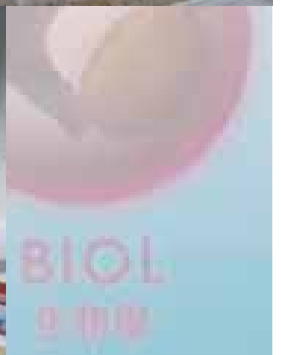
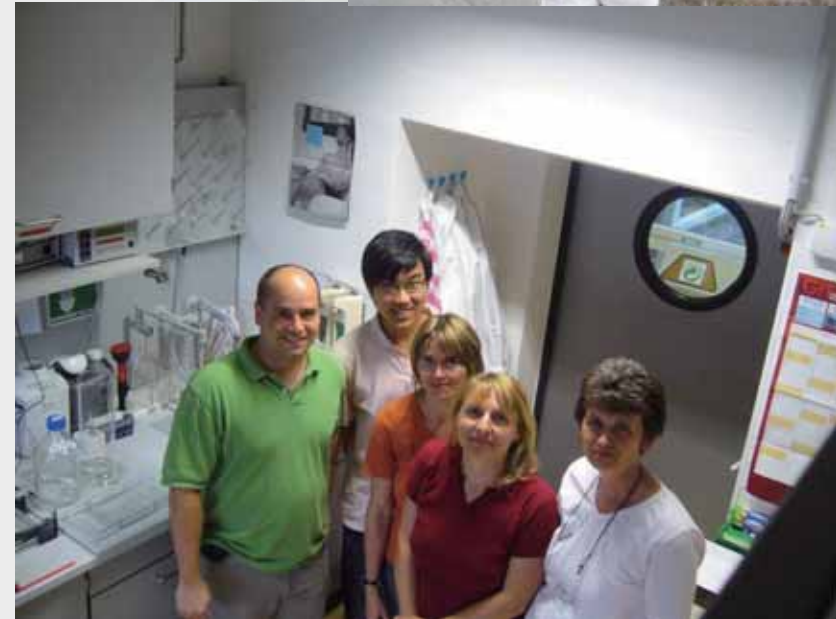


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# Dedicated Research Exchange And Mentorship

Life Sciences  
Programmes (LSCI)

生命科學課程  
JUPAS Code: 4757



生命科學

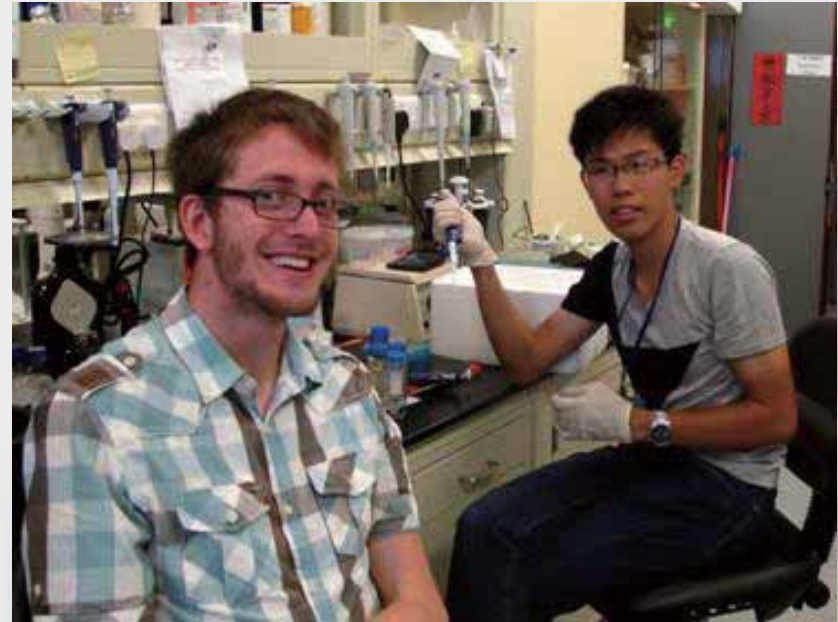
Life Sciences



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# Scientist Mentorship And Research Training

Life Sciences  
生命科學課程  
JUPAS Code: 475



生命科學

Life Sciences



香港中文大學  
The Chinese University of Hong Kong

# Our students have plenty of *Internship and Exchange opportunities*



香港特別行政區政府  
漁農自然護理署



Life Sciences  
Programmes (LSCI)

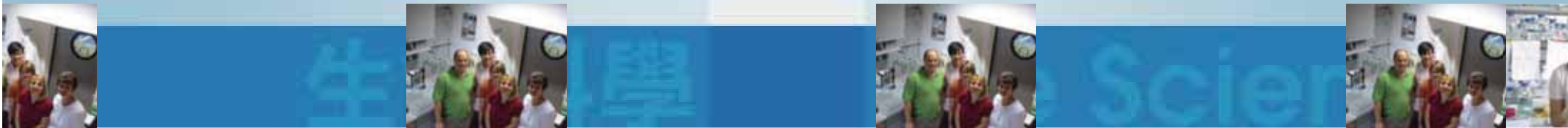


生命科學課程

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# Life as a Life Science undergraduate



Active learning



Research Opportunity



Exchange with prominent scientists



Summer Internship



Extracurricular activities organized by Student and Staff

生命科學

Life Sciences



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The Chinese University of Hong Kong

# Good Teacher-Student Relationship

CMBI  
細胞及分子生物學

## Enquiry:

School of Life Sciences  
Room 132, Science Centre North Block  
The Chinese University of Hong Kong  
Tel:(852) 3943 6122 Fax: (852) 2603 5646  
Email: [lifesciences@cuhk.edu.hk](mailto:lifesciences@cuhk.edu.hk)

WEBSITE:

<http://www.sls.cuhk.edu.hk/index.php/undergraduate-programmes/msbbs-article/undergraduate-study-schemes-4-year-curriculum>



生命科學

Life Sciences