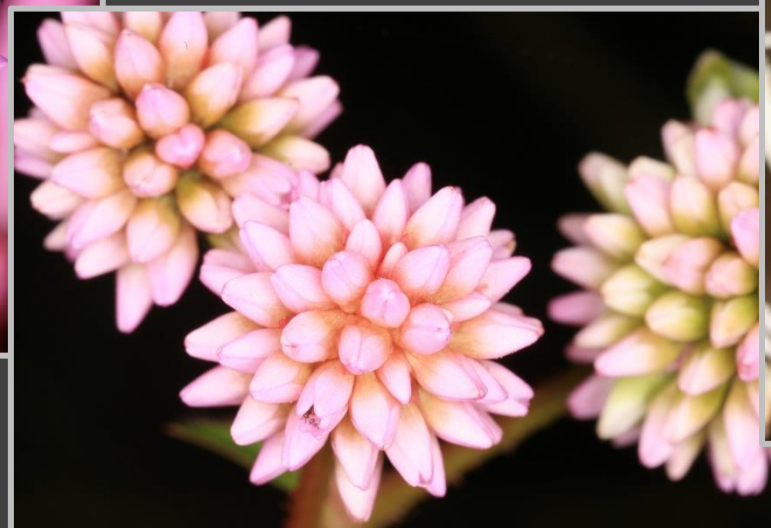
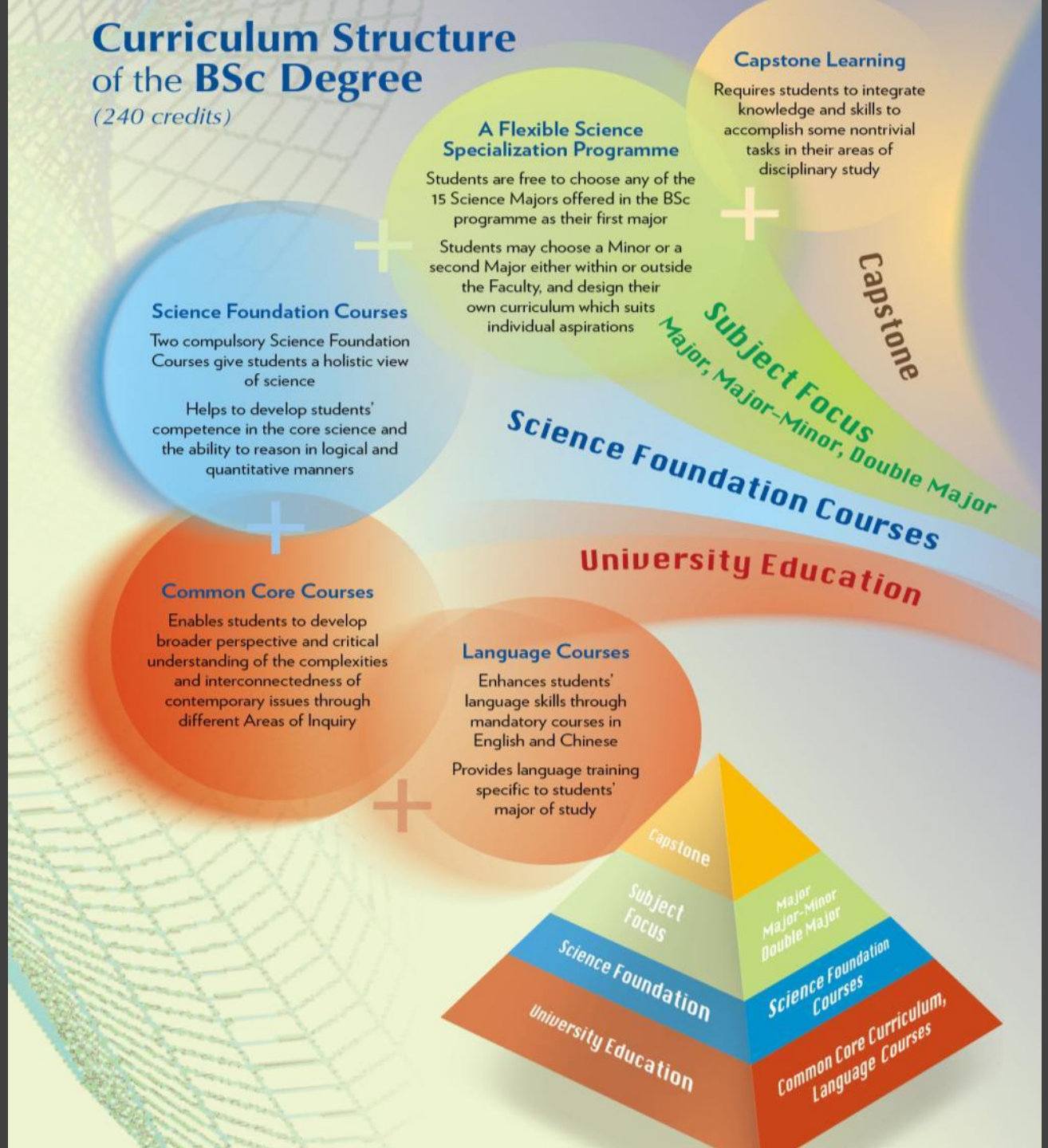
Ecology & Biodiversity

Dr. Benoit Guénard, School of Biological Sciences





Capstone learning

Require students to integrate knowledge and skills to accomplish some complex tasks in their areas of disciplinary study

Bachelor of Science

Ecology & Biodiversity (Intensive, Major & Minor)

4-year curriculum

- Diversity of species
- Interactions between species & their environment
- Regional & global threats on biodiversity

Why choosing this major?

Interest in Science

Curious about biology, nature & conservation

Enthusiast about exploring the natural world

Love fieldwork and/or laboratory work

Concerned about global environmental issues and protection of nature

What will you learn?

Broad knowledge in ecology, evolution and conservation

Skills to work independently & in team

Develop analytical and critical skills

Communication skills

Understanding of local & global environmental issues

Ecology & Biodiversity

Objectives:

1. ***Research***

- **Explore the biodiversity of living organisms (microorganisms, plants and animals) and their ecology, with particular reference to Hong Kong and Southeast Asia**

2. ***Teaching***

- **Help students to understand:**
  - **biological diversity, the relationships between organisms and their environments**
  - **how humans interact with other organisms and the environment**
  - **the importance and need for biodiversity conservation**

Faculty of SCIENCE

4-YEAR Curriculum

Major in Ecology & Biodiversity

1. Introductory level courses (48 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning
SCNC1112 Fundamentals of modern science

Disciplinary Courses (36 credits)

BIOL1110 From molecules to cells
BIOL2102 Biostatistics
BIOL2306 Ecology and evolution
BIOL1309 Evolutionary diversity
ENVS2001 Environmental field & lab course
ENVS2016 Environmental data analysis

Faculty of SCIENCE

4-YEAR Curriculum

Major in Ecology & Biodiversity

2. Advanced level courses (42 credits)

BIOL3302 Systematics and phylogenetics
BIOL3301 Marine biology
BIOL3319 Tropical terrestrial ecology

Plus at least 18 credits (3 courses) selected from the following:

BIOL3101 Animal behaviour
BIOL3303 Conservation ecology
BIOL3305 Tropical & temperate marine ecology
BIOL3314 Plant structure and evolution
BIOL3419 Insect ecology
BIOL3501 Evolutionary biology
BIOL4505 Oyster aquaculture

BIOL3322 Marine invertebrate zoology
BIOL3318 Experimental intertidal ecology
BIOL4302 Environmental impact assessment
BIOL4304 Ecosystem functioning & services
ENVS3019 Urban ecology
ENVS3020 Global change ecology
BIOL3328 Nearshore marine & estuarine ecol.

Major in Ecology & Biodiversity

3. Capstone requirement (6 credits)

At least 6 credits selected from the following:

BIOL3991 Directed studies in ecology & biodiversity
BIOL4991 Ecology & biodiversity project

Total Major: 96 credits

1st Year

BIOL1110 From molecules to cells

BIOL1309 Evolutionary diversity

SCNC1111 Scientific method and reasoning

SCNC1112 Fundamentals of modern science

CCC

2nd Year

BIOL2102 Biostatistics

BIOL2103 Biological sciences laboratory course

BIOL2306 Ecology and evolution

ENVS2002 Environmental data analysis

CCC

BIOL3506 Evolutionary biology

20 core and elective courses

Small classes (12-25 students)

65% of courses with field components

4th Year

BIOL4991 Ecology & biodiversity project (12credits)

BIOL3991 Directed studies in ecology & biodiversity

BIOL4861 Ecology & biodiversity internship

BIOL4304 Ecosystem functioning &services (19)

BIOL4302 Environmental impact assessment

1st Sem. 2nd Sem.

Capstone

Disciplinary Core

Disciplinary Elective

Every other year (year taught)

Field course included

Intensive Major in Ecology & Biodiversity

Accredited degree by the

Royal Society of Biology

Intensive Major in Ecology & Biodiversity

- Diploma with increased international visibility & recognition
- Membership
  - Access to an international network of professionals
  - Discount on selected life science titles and professional development courses
- Insurance of excellency in teaching and learning

Faculty of SCIENCE

4-YEAR Curriculum

Intensive Major in E & B

1. Introductory level courses (60 credits)

Science Foundation Courses (12 credits)

SCNC1111 Scientific method and reasoning
SCNC1112 Fundamentals of modern science

Disciplinary Courses (48 credits)

BIOL1110 From molecules to cells
BIOL2102 Biostatistics
BIOL2306 Ecology and evolution
EASC1401 Blue Planet

BIOL1309 Evolutionary diversity
BIOL2103 Biological sciences laboratory course
ENVS2002 Environmental data analysis
One chemistry course: CHEM1041 or 1042

Faculty of SCIENCE

4-YEAR Curriculum

Intensive Major in E & B

2. Advanced level courses (72 credits)

BIOL3302 Systematics and phylogenetics
BIOL3301 Marine biology
BIOL3319 Tropical terrestrial ecology
BIOL3101 Animal behaviour
BIOL3303 Conservation ecology

Plus at least 42 credits (7 courses) selected from the following:

BIOL3305 Tropical & temperate marine ecology
BIOL3314 Plant structure and evolution
BIOL3318 Experimental intertidal ecology
BIOL3419 Insect ecology
BIOL3506 Evolutionary biology
BIOL4505 Oyster aquaculture
BIOL3322 Marine invertebrate zoology
BIOL4302 Environmental impact assessment
BIOL4304 Ecosystem functioning & services
ENVS3019 Urban ecology
ENVS3020 Global change ecology
BIOL3328 Nearshore marine & estuarine ecol.

Intensive Major in E & B

3. Capstone requirement (12 credits)

Core capstone course

BIOL4991 Ecology & biodiversity project

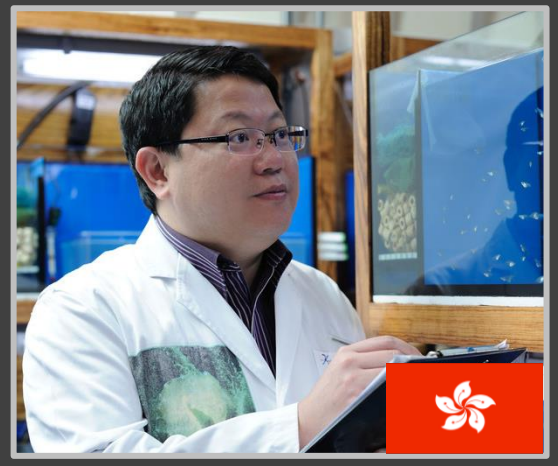
Elective capstone course (optional)

BIOL3991 Directed studies in ecology & biodiversity

Total Intensive Major: 144 credits

A diverse and international team

Prof. David Dudgeon
Freshwater Ecology



Prof. Kenneth Leung
Aquatic toxicology & ecophysiology

Prof. Richard Saunders
Plant ecology & evolution

Prof. Gray Williams
Intertidal Ecology

Dr. Stefano Cannicci
Mangrove ecology

Dr. Rajan Vengatesen
Ocean acidification

Dr. Bayden Russell
Marine ecology

Dr. Moriaki Yasuhara
Deep sea ecology

A diverse and international team

17 World-class researchers

Dr. Lou
Ecosyst

> 1300 publications in ecology & conservation

Dr. Benoit Guénard
Insect ecology

Dr. Billy Hau
Ecological restoration

Dr. Celia Schunter
Population genetics

Dr. Simon Sin
Animal Behaviour

Dr. Jin Wu
Plant remote sensing

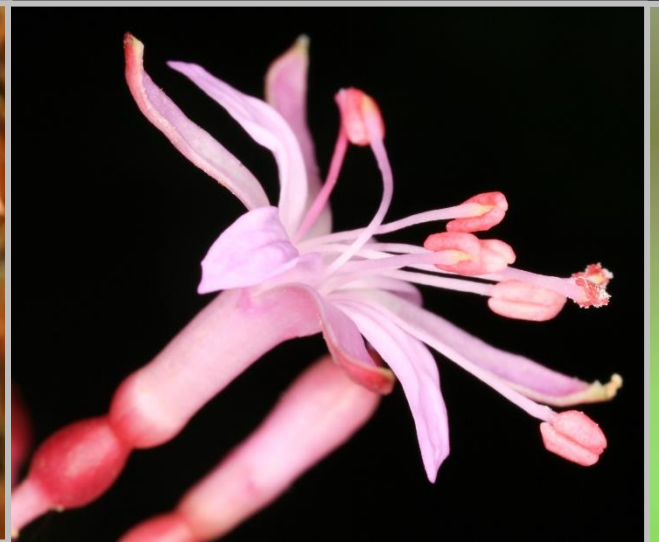
Major in Ecology & Biodiversity

Introductory Level Courses

- *Evolutionary Diversity*
- *Ecology and Evolution*

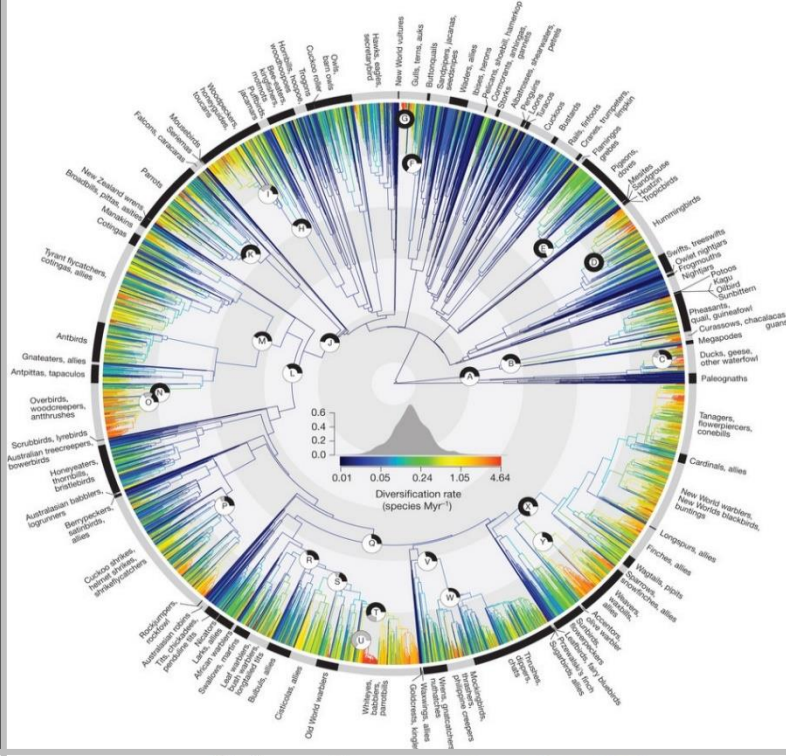
Fundamental knowledge in Ecology & Biodiversity

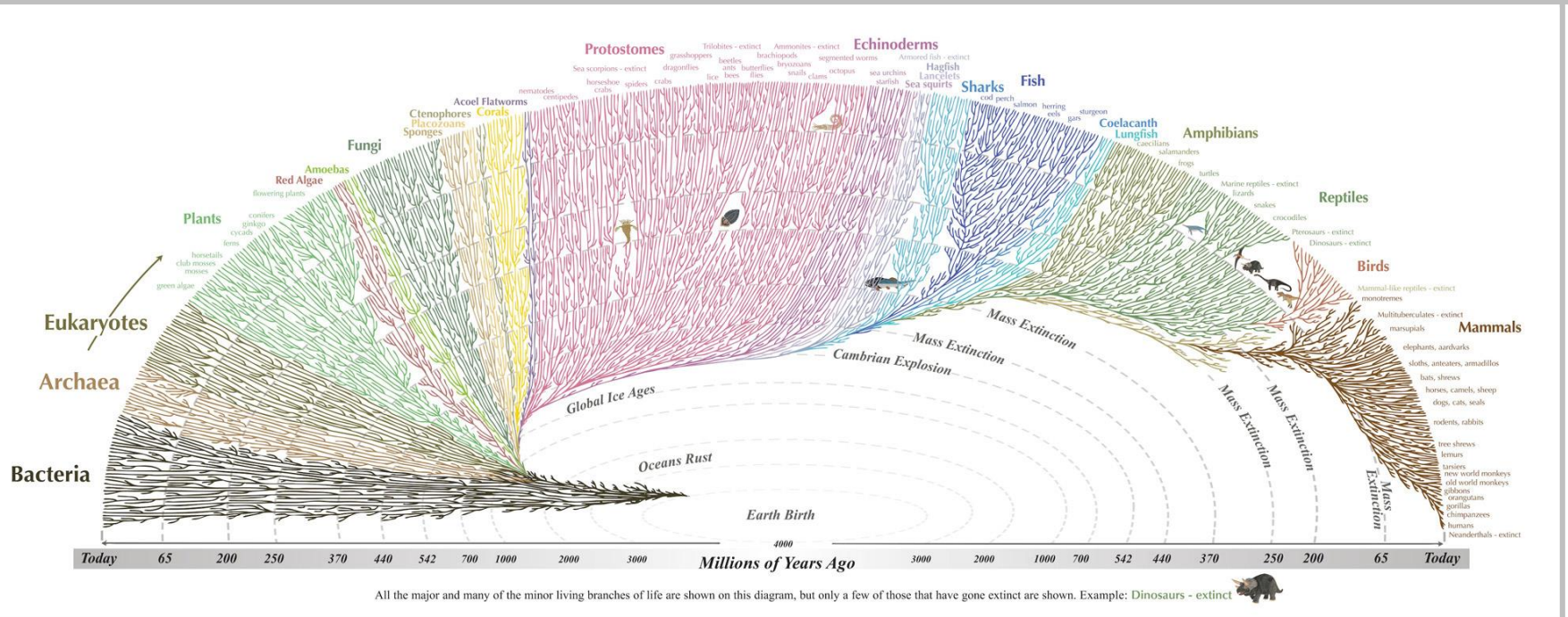


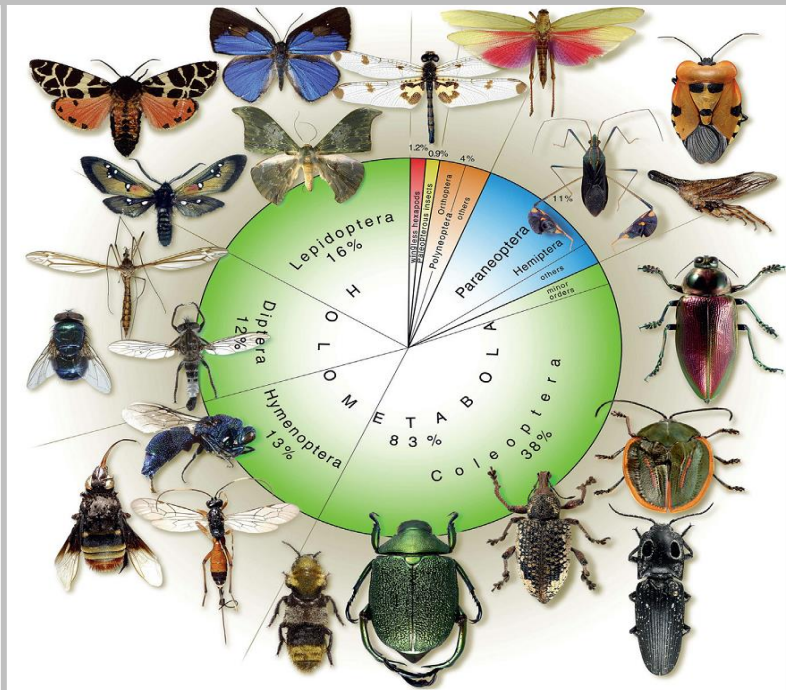



Evolutionary Diversity

- **Introduction to the diversity of plant and animal life & their evolutionary history and relationships**







Ecology & Evolution

- **Introduction to the interaction between organisms and their environment and the central role of evolution**
- **Understand and explain the significance of nature using scientific methods**

Ecology & Evolution

- **5 days field course!**
- **Study both marine and terrestrial ecosystems & organisms of Hong Kong**
- **Familiarize with scientific methods to study organisms and their environments**

Hands on learning

16 courses with field courses offered

Marine ecology

Terrestrial ecology

Coastal ecology

Freshwater ecology

Overseas field courses

- Australia
- British Colombia (Canada)
- Hainan (China)
- Malaysia
- Philippines
- Sri Lanka
- South Africa

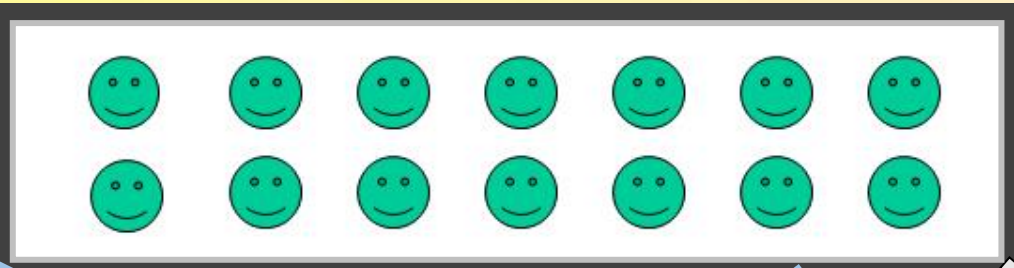
Make an impact!

Many opportunities to engage into research as an undergraduate among one of 17 laboratories!

Swire Institute of Marine Science

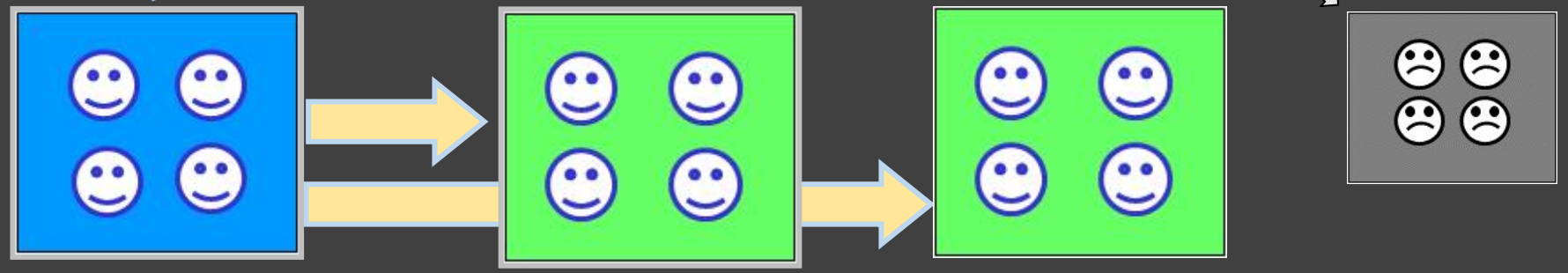
Building your future career

E&B students



100% employment after 6 months

Graduates



Further studies: MPhil, PhD, MSc, MLA…etc.

19%

NGOs, Govt., private sector

27%

Education

19%

Jobs not related to research or conservation

21%*

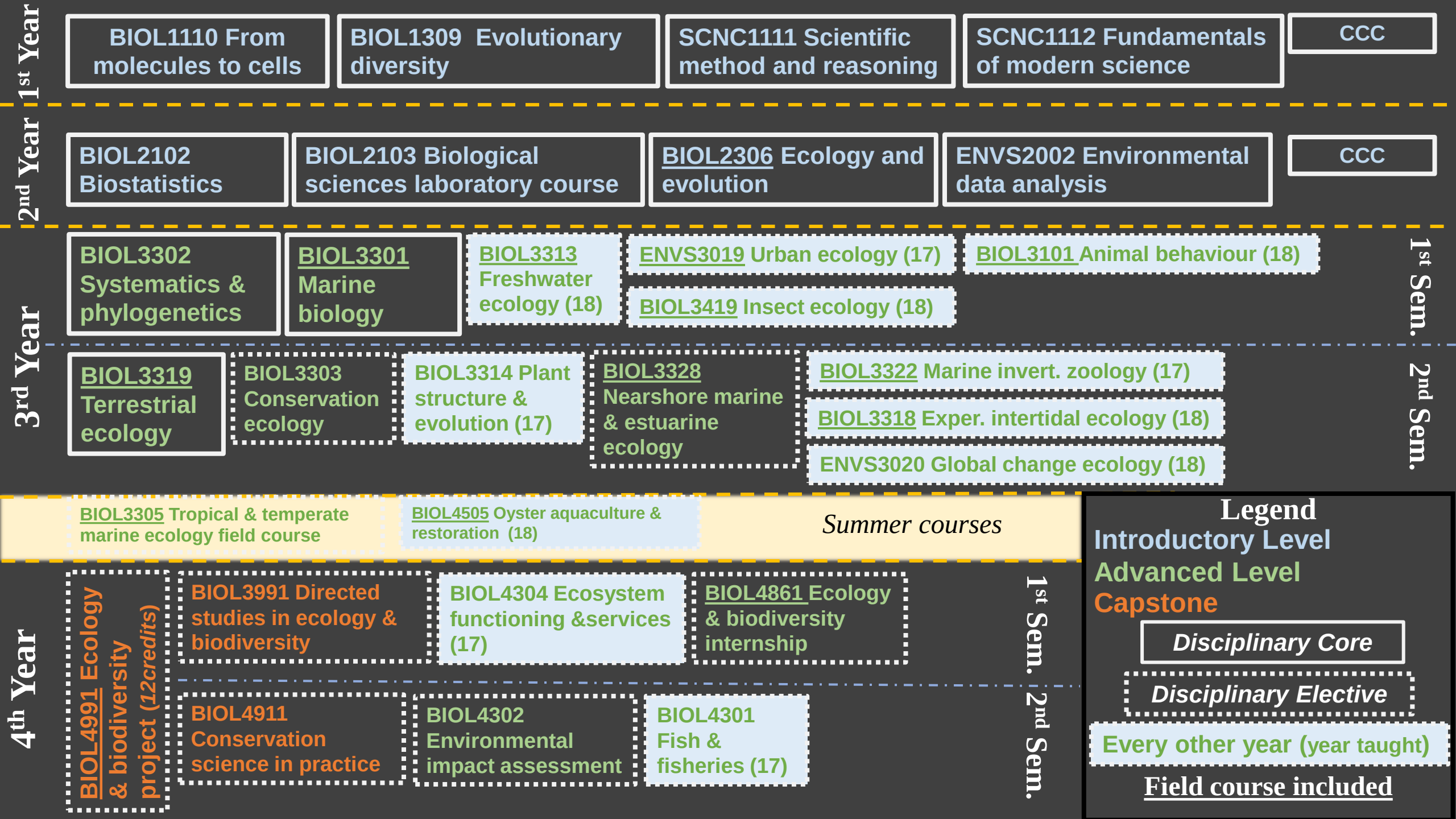
Thank you!

Student Peer Advisers in 2018-19

- **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 Student Peer Advisers (SPAs) if you have any questions about your study (their contacts can be found at the Faculty's website)**
  - **Miss LEE Ling Kak (Ruth) (BSc Year 4)**
  - **Mr TIN Kwan Yau (BSc Year 4)**


1st Year
BIOL1110 From molecules to cells
BIOL1309 Evolutionary diversity
SCNC1111 Scientific method and reasoning
SCNC1112 Fundamentals of modern science
CCC
2nd Year
BIOL2102 Biostatistics
BIOL2103 Biological sciences laboratory course
BIOL2306 Ecology and evolution
ENVS2002 Environmental data analysis
CCC
3rd Year
1st Sem.
BIOL3302 Systematics & phylogenetics
BIOL3301 Marine biology
BIOL3313 Freshwater ecology (18)
ENVS3019 Urban ecology (17)
BIOL3101 Animal behaviour (18)
BIOL3419 Insect ecology (18)
2nd Sem.
BIOL3319 Terrestrial ecology
BIOL3303 Conservation ecology
BIOL3314 Plant structure & evolution (17)
BIOL3328 Nearshore marine & estuarine ecology
BIOL3322 Marine invert. zoology (17)
BIOL3318 Exper. intertidal ecology (18)
ENVS3020 Global change ecology (18)
BIOL3305 Tropical & temperate marine ecology field course
BIOL4505 Oyster aquaculture & restoration (18)
Summer courses
4th Year
1st Sem.
BIOL4991 Ecology & biodiversity project (12credits)
BIOL3991 Directed studies in ecology & biodiversity
BIOL4304 Ecosystem functioning &services (17)
BIOL4861 Ecology & biodiversity internship
2nd Sem.
BIOL4911 Conservation science in practice
BIOL4302 Environmental impact assessment
BIOL4301 Fish & fisheries (17)
Legend
Introductory Level
Advanced Level
Capstone
Disciplinary Core
Disciplinary Elective
Every other year (year taught)
Field course included