

Major Title Major in Ecology & Biodiversity (Intensive)

Offered to students 2020
admitted to Year 1 in

Objectives:

This intensive major is directed at teaching students the 'rules of existence' for organisms in natural and human-modified environments, including major threats to biodiversity and the approaches adopted to conserve species and habitats. Special reference is made to the plants, animals and habitats of Hong Kong and Asia, the ways in which humans have altered the region's ecosystems, and the management or mitigation of those impacts. The range and scope of courses offered will provide students with a firm foundation in ecology, biodiversity and related disciplines, and equip them with the skills required for postgraduate research or employment with government and non-government organizations concerned with biodiversity conservation, nature preservation or habitat assessment and management.

The intensive major is based around an introductory core that emphasizes biology, ecology and evolution of plants and animals; it includes a compulsory residential field trip (as part of the Ecology and Evolution course), as well as instruction in data analysis and biostatistics. Many of the advanced courses in the major have a strong emphasis on field-work and on small projects performed by students. They teach students about the ecology and biodiversity of different ecosystems (e.g. marine, terrestrial, freshwater and urban) and taxa (e.g. flowering plants, insects, fishes, marine mammals). Other courses focus on more applied topics, such as environmental impact assessment, conservation, and provide an opportunity for students to become familiar with specialised topics ranging from systematics to animal behaviour.

During their final year, students have an opportunity to conduct independent research in the form of an ecology and biodiversity research project or a directed-studies dissertation under the close supervision of an individual staff member. Students are able to make use of the facilities of the Swire Institute of Marine Science for such work. Strong emphasis is also placed upon experiential learning during overseas field trips that can be taken as part of the capstone requirement of this intensive major.

Ecology and biodiversity research requires extensive scientific knowledge as well as passion, and students are encouraged to take more than the requisite 12-credit minimum of capstone courses. Through these courses, and the range of formal field-based options as well as various extra-curricular activities offered, students will be expected to develop expertise in one or a few groups of plants or animals; this is an important skill since an ability to identify species and major taxa is an essential prerequisite for biodiversity scientists or conservation biologists.

This intensive major has been accredited by the Royal Society of Biology (RSB), UK, for the purpose of meeting in part the academic and experience requirement for the Membership and Chartered Biologist (CBiol).

Learning Outcomes:

By the end of this programme, students should be able to:

- PLO 1 : understand and appreciate the major living and non-living components of the local, regional and global environment, and how they interact; evaluate their role in ecosystem functioning and identify threats to them; and know how these threats can be mitigated (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- PLO 2 : assess, understand and appreciate the variety of life in Hong Kong's and Southeast Asia's natural habitats, become equipped to assess, study, manage and protect that diversity, and appraise the related moral and ethical issues (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- PLO 3 : have sufficient experience of the basic techniques of modern ecological science and prepare to learn new ones for specific tasks (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- PLO 4 : use IT tools appropriately, and access and evaluate materials from libraries, archives and the Internet (by means of coursework, laboratory-based, tutorial classes and/or project-based learning in the curriculum)
- PLO 5 : demonstrate original, independent and critical thinking, with mastery of a range of communication skills (by means of coursework, project-based and presentation opportunities in the curriculum)
- PLO 6 : have the skill and knowledge to pursue postgraduate ecological research in top-level Universities around the world or to develop a career in nature conservation and environmental education, especially in Hong Kong and southern China (by means of coursework, tutorial classes, project-based and research-based learning in the curriculum)
- PLO 7 : be motivated and sufficiently equipped to apply the knowledge solve local, regional and global environmental problems in a changing world. (by means of coursework, laboratory-based, tutorial classes, capstone learning and/or project-based learning in the curriculum)

Impermissible Combinations:

Major in Biological Sciences
Major in Biological Sciences (Intensive)
Major in Ecology & Biodiversity
Minor in Ecology & Biodiversity

Required courses (144 credits)

1. Introductory level courses (60 credits)

Disciplinary Core Courses: Science Foundation Courses (12 credits)

SCNC1111	Scientific method and reasoning (6)	(Note 1)
SCNC1112	Fundamentals of modern science (6)	(Note 1)

Disciplinary Core Courses (42 credits)

BIOL1110	From molecules to cells (6)	(Note 1)
BIOL1309	Evolutionary diversity (6)	(Note 1)
	Biostatistics (6)	(Note 1)

BIOL2102		
BIOL2103	Biological sciences laboratory course (6)	(Note 1)
BIOL2306	Ecology and evolution (6)	(Note 1)
EASC1401	Blue Planet (6)	
ENVS2002	Environmental data analysis (6)	(Note 1)

Disciplinary Electives (6 credits)

Plus at least 6 credits selected from the following courses:

CHEM1041	Foundations of chemistry (6)	Take either CHEM1041 or CHEM1042 to fulfill this 6 credits requirement, but not both.
CHEM1042	General chemistry I (6)	Take either CHEM1041 or CHEM1042 to fulfill this 6 credits requirement, but not both.

2. Advanced level courses (66 to 72 credits) (Note 2)**Disciplinary Core Courses (30 credits)**

BIOL3101	Animal behaviour (6)	
BIOL3301	Marine biology (6)	(Note 1)
BIOL3302	Systematics and phylogenetics (6)	(Note 1)
BIOL3303	Conservation biology (6)	
BIOL3319	Tropical terrestrial ecology (6)	(Note 1)

Disciplinary Electives (36 to 42 credits) (Note 2)

Plus at least 36 or 42 credits selected from the following courses:

BIOL3305	Tropical and temperate marine ecology field course (6)
BIOL3313	Freshwater ecology (6)
BIOL3314	Plant structure and evolution (6)
BIOL3318	Experimental intertidal ecology (6)
BIOL3322	Marine invertebrate zoology (6)
BIOL3328	Nearshore marine and estuarine ecology (6)
BIOL3408	Genetics (6)
BIOL3419	Insect ecology: the little things that run the world (6)
BIOL3506	Evolutionary biology (6)
BIOL4301	Fish and fisheries (6)
BIOL4302	Environmental impact assessment (6)
BIOL4304	Ecosystem functioning and services (6)
BIOL4505	Oyster aquaculture (6)
ENVS3019	Urban ecology (6)
ENVS3020	Global change ecology (6)

3. Capstone requirement (12 to 18 credits) (Note 2)

Disciplinary Core Courses (12 credits)

BIOL4991	Ecology & biodiversity project (12)
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Disciplinary Electives (6 credits)

BIOL3991	Directed studies in ecology & biodiversity (6)
BIOL4911	Conservation science in practice (6)

Notes:

1. These are core courses in the regular Ecology & Biodiversity Major (96 credits) curriculum.

2. Within the E&B accredited curriculum, students have to pass a total of 60 credits within the Introductory Level Courses spread across two Science Foundation Courses (Level 1; 12 credits), seven Disciplinary Core Courses (Levels 1 & 2; 42 credits) and one chemistry (Level 1; 6 credits). For the chemistry course, students will have the choice between CHEM1041 and CHEM1042 in function of their prior chemistry background acquired during their upper secondary education. Students with no chemistry background should follow CHEM1041, while students with previous chemistry background should take CHEM1042.

Advanced Level Courses cover a total of 66 to 72 credits. Those are divided between five Disciplinary Core Courses (Level 3; 30 credits) and 6 to 7 Disciplinary Elective Courses (Level 3 & 4; 36 to 42 credits) among a choice of fourteen different courses. As eight of the Disciplinary Elective courses are being taught every other year, students must pay attention to the year during which these courses are taught and ensure that they have fulfilled the necessary requirements. There is a student mentorship programme in place that can assist them in this.

During their final year, students should complete a minimum of 12 credits as Capstone Courses (maximum of 18). The Ecology & Biodiversity Project (12 credits) is mandatory and students can choose to complete one of the other two Elective Capstone Courses (6 credits). If students choose to complete 18 credits of Capstone Courses, then they are required to complete only 36 credits of Disciplinary Elective Courses within the Advanced Level Courses (instead of 42 credits)

Finally, students who participate in student exchange programme are expected to enquire, prior to their departure from HKU, about potential equivalences with the courses taken during exchange programmes to ensure that they match requirements for obtaining the RSB accredited programme.

3. Candidates who have been admitted to Year 1 in 2020-21 (and thereafter) and have achieved any one of the following qualifications are exempted from taking SCNC1111. It is optional for them to take this course. Those who do not take this course should take a 6-credit disciplinary elective course of the science major in lieu.

- Level 4 or above in Mathematics Extended Part Module 1 or 2 in the Hong Kong Diploma of Secondary Education (HKDSE)
- Level 5 or above in Mathematics Higher Level in International Baccalaureate (IB)
- Grade B or above in Mathematics and Further Mathematics in General Certificate of Education Advanced Level (GCEAL)
- Mathematics qualification in Gao Kao will be considered on a case-by-case basis

Remarks:

Important! Ultimate responsibility rests with students to ensure that the required pre-requisites and co-requisite of selected courses are fulfilled. Students must take and pass all required courses in the selected primary science major in order to satisfy the degree graduation requirements.