

Course Descriptions for the year of 2021/22

Updated at 4 June 2019

BIOL2120	
Cell Biology	細胞生物學
<p>This course helps students build up solid foundation in cell biology for their future research and studies in life sciences. Core modules of this course include:</p> <ol style="list-style-type: none">1. Functions of technology and engineering in advancing understanding of cell;2. Chemistry and physics of cell membrane and its mechanism of communications and transportation;3. Endomembrane system and cytoskeleton in intracellular structuring and trafficking; and4. Mechanisms of signal transduction in cell proliferation and programmed cell death. As the final capstone module of this course, the significance of cell biology in understanding and improving human health and disease will be discussed. Clinical researchers may be invited to share their innovative research design and findings and to inspire our students about the importance of basic discoveries in applied studies. <p>Pre-requisite: LSCI1002 Introduction to Biological Sciences.</p>	<p>這課程旨在幫助學生為未來的生命科學的研究和學習奠定堅實的細胞生物學基礎。本課程的核心單元包括：</p> <ol style="list-style-type: none">1. 技術和工程在提高對細胞的認識上的作用;2. 細胞膜的化學和物理及其交通運輸機制;3. 細胞內的結構和運輸中的內膜系統和細胞骨架; 和4. 信號轉導在細胞增殖和程序性細胞死亡中的機制。作為本課程的最後一部分，我們將討論細胞生物學在理解和改善人類健康和疾病方面的意義。臨床研究人員會被邀請分享他們的創新研究設計和發現，並激發學生理解基本發現對應用研究的重要性。 <p>先修科目：LSCI1002 生物科學入門。</p>

BIOL2210	
Ecology	生態學
<p>This course provides students with an introduction to the general principles of ecology. The course covers four broad areas: behavioural ecology, population ecology, community ecology and ecosystem ecology. Behavioural ecology examines how behaviour contributes to survival and reproduction. The relationship between behaviour, ecology and evolution is emphasized. Population ecology concerns how populations grow and how they are limited by food, competition and predation. The community ecology component will focus on factors that determine the structure and function of biological communities, including nutrient cycles and biogeochemistry. The course will conclude with a module on ecosystem ecology discussing how ecosystem structure, function and services may be influenced by disturbances. Mathematical models will be used to illustrate the theoretical background for topics discussed.</p> <p>Pre-requisite : LSCI1002 Introduction to Biological Sciences.</p>	<p>本課程向學生提供了生態學基本原理的概要知識。本科覆蓋了四個廣泛的領域：行為生態學，種群生態學和群落生態學。行為生態學揭示動物的行為是如何協助其存活和繁殖。種群生態學則關注種群如何形成以及種群如何受制於食物、競爭和捕食。群落生態學則重點介紹群落功能和物種的豐度之間的聯系。決定一個地區物種的數量的重要因素亦會逐一介紹。數學模型將用於解釋相關的背景理論知識。</p> <p>先修科目：LSCI1002 生物科學入門。</p>

BIOL2213	
Ecology Laboratory	生態學實驗
<p>This experimental course is designed to illustrate key ecological concepts. Corequisite: BIOL2210 Ecology.</p>	<p>本實驗課程介紹生態學之基本概念。同修科目：BIOL2210 生態學。</p>

BIOL2313	
Genetics Laboratory	遺傳學實驗
<p>This experimental course introduces fundamental concepts and basic techniques used in general genetics and molecular genetics. Corequisite: BIOL2310 General and Molecular Genetics or BIOL2410 General Genetics .</p>	<p>本實驗科目介紹普通遺傳學及分子遺傳學的基礎理論和實驗技術。同修科目：BIOL2310 普通與分子遺傳學 或 BIOL2410 普通遺傳學。</p>

Updated as at 2 March 2020

BIOL2410	
General Genetics	普通遺傳學
<p>This course deals with the fundamental principles of heredity eukaryotes with emphasis on Mendelian inheritance, non-Medelian inheritance, linkage and mapping, structure of DNA/RNA and chromosome, and inheritance patterns of genetic diseases. Pre-requisite: LSCI1002 Introduction to Biological Sciences and BIOL2120 Cell Biology or permission of instructor.</p>	<p>本科闡述真核生物的遺傳機理，重點闡述孟德爾遺傳，非孟德爾遺傳，遺傳連鎖圖，核酸及染色體的結構，以及基因疾病的遺傳模式。 先修科目：LSCI1002 生物科學入門及 BIOL2120 細胞生物學或經導師同意。</p>

BIOL2420	
Population Genetics	族群遺傳學
<p>This course will provide a general introduction to population genetics, with emphasis on the interaction of evolutionary processes (including mutation, natural selection, genetic drift, inbreeding, and gene flow) in determining the genetic composition of natural populations and the biological/conservation implications of these information. Phenotypic and genetic variation in natural populations Hardy-Weinberg principle and its extension Genetic drift, natural selection and migration Quantitative genetics Molecular population genetics Conservation genetics Co-requisite: BIOL2410</p>	<p>本課程旨在為學生提供族群遺傳學的一般性介紹，重點是進化過程（包括突變、自然選擇、遺傳漂變、近親繁殖和基因流）的相互作用對自然族群遺傳組成和進化軌跡的影響，以及這些訊息於生物學及保育上的意義。 自然種群中的表型和遺傳變異 Hardy-Weinberg 原理及其延伸 遺傳漂變、自然選擇和遷移 定量遺傳學 分子族群遺傳學 保育遺傳學 同修科目：BIOL2410 普通遺傳學。</p>

BIOL3012	
Biodiversity Laboratory I	生物多樣性實驗（一）
<p>This experimental course introduces the diversity, forms and functions of fungi, algae, bryophytes and invertebrates. Corequisite: BIOL3560 Biology of Fungi and Non-Vascular Plants and BIOL3610 Invertebrate Form and Function.</p>	<p>本實驗課程介紹物種的形態和功能，讓學生認識真菌、藻類、苔蘚植物及無脊椎動物的多樣性。同修科目：BIOL3560 真菌及非維管束植物生物學及 BIOL3610 無脊椎動物形態及功能。</p>

BIOL3022	
Biodiversity Laboratory II	生物多樣性實驗（二）
This experimental course introduces the diversity of higher plants and vertebrate animals through an examination of a wide variety of specimens and comparison of their body forms and structures. Corequisite: BIOL3570 Biology of Vascular Plants and BIOL3620 Vertebrate Life.	本實驗課程通過檢驗多類標本及比較物種的形態和結構，讓學生認識高等植物及脊椎動物的多樣性。同修科目：BIOL3570 維管植物生物學及 BIOL3620 脊椎動物學。

BIOL3310	
Human Biology	人類生物學
This course introduces the study of humans as a zoological species, through the examination of the extant primates and fossils, biochemical microevolution of mankind and embryonic development. The concept that humans, like other biological species, exhibit variations will be dealt with. The importance of these variations in adapting to environmental stress will be discussed. Much of this course, therefore, will outline the wide range of adaptive power that humans possess with particular emphasis on the plasticity of human adaptability as a factor contributing to the success of humankind. The final part will treat human as a social animal and discuss the possible future of humankind in the light of their present activities. Pre-requisite: LSCI1002 Introduction to Biological Sciences.	本課程旨在裝備對人類生物學課程有興趣的學生而設計。本課程介紹人作為動物界一員的研究，內容包括探討現存靈長類與化石，人類生物化學微進化，以及胚胎發育。主要目的是使學生瞭解人能戰勝自然生存下來的背景，及其本身對環境的影響；人和其他生物一樣，為適應環境壓力而有形態上或生物化學上的變異。因此，本科將著重闡述人對環境的適應性及可塑性。最後部份將討論人的社會生物學問題。 先修科目：LSCI1002 生物科學入門。

BIOL3410	
General Microbiology	普通微生物學
<p>This course includes the history and scope of microbiology, the importance of microorganisms, structures and functions of microorganisms, microbial physiology, microbial growth and application, control of microorganisms and antibiotics, environmental and industrial microbiology, genetic engineering, virology, immunology and microbial diseases, metabolic diversity of microorganisms. The basic concepts and application values of microbiology learnt in this course provide students with fundamental knowledge required for some advanced courses. Pre-requisite: BIOL2120 Cell Biology and BCHE2030 Fundamentals of Biochemistry.</p>	<p>本課程包括了微生物學的歷史和範圍、微生物的重要性、微生物的結構和功能、微生物生理學、微生物的生長和應用、控制微生物與抗生素、環境和工業微生物學、基因工程、病毒學、免疫學和微生物引至的疾病以及微生物代謝的多樣性。本科為學生提供微生物學基本概念和應用價值等基礎知識，有助學生修讀一些進階科目。先修科目：BIOL2120 細胞生物學及 BCHE2030 基礎生物化學。</p>

BIOL3413	
Microbiology Laboratory	微生物學實驗
<p>This experimental course introduces fundamental concepts and techniques used in microbiology, including microbial techniques, bacterial growth characteristics, biochemical activities of bacteria and identification of unknown bacteria. Corequisite: BIOL3410 General Microbiology.</p>	<p>本實驗課程介紹微生物學的基礎理論和實驗技術，當中包括微生物技術，細菌的生長特性，細菌的生化活性及未知菌的鑒定。同修科目：BIOL3410 普通微生物學。</p>

BIOL3420	
Advanced Genetics and Epigenetics	遺傳學和表觀遺傳學
<p>If each cell in our body contains identical DNA sequence, how can they selectively activate or repress distinct sets of genes, leading to different morphology, behaviour and phenotype? To address this fundamental question in biology, one would need to examine not just the genome but also the epigenome. Here, the term epigenetics refers to heritable changes that can regulate genes expression without altering the DNA sequence. This course will cover different aspects of transcriptional regulation, modification and organization of the chromatin, RNA and DNA modification, non-coding RNA, biological network and nuclei organization, as well as the computation challenges associated with deciphering genomic and epigenetic data. It will focus on different cutting edge genomic approaches and technologies, with the aim to let students</p>	<p>人體內的每個細胞都有相同的 DNA。那它們是如何激活或抑制不同的基因表達，從而導致不同的形態，行為和表型？為了解決生物學中的這一基本問題，人們不僅需要研究基因，還需要研究表觀調控。本課程涵蓋轉錄調控，染色質的修飾和重構，RNA 和 DNA 修飾，非編碼 RNA，生物網絡和核染色質空間構型，以及如何用計算及生物學分析基因組學和表觀遺傳數據。本課程將重點介紹於基因組學以及表觀遺傳學，目的是讓學生發展批判性思維技能，使用基因組學和表觀遺傳學方法解決生物學問題。先修科目：BIOL2410 普通遺傳學</p>

Course Descriptions of Biology Programme, CUHK (for BIOL-coded courses ONLY) (2021.08 uploaded)

<p>develop critical thinking skills to solve biological problems using these molecular tools and methods. Pre-requisite: BIOL2410 General Genetics.</p>	
---	--

BIOL3530	
Plant Physiology	植物生理學
<p>This course provides students with a basic understanding of the various processes involved in growth and development of plants. Topics include plant-water relations, mineral nutrition, transport, photosynthesis, respiration, nitrogen metabolism and signalling, seed germination and dormancy, embryogenesis and organogenesis, reproduction and senescence, secondary metabolites and chemical defense, plant-microbe interactions, hormonal and environmental control of plant growth and development. Pre-requisite: BCHE2030 Fundamentals of Biochemistry.</p>	<p>本課程提供學生對植物生長和發育過程的基本知識。涉及的主題包括植物的水分生理；礦物營養及運輸；光合作用；呼吸作用；氮代謝與信號傳遞；種子萌發與休眠；胚胎發育與器官發生；生殖與衰老；次級代謝物和化學防禦；植物和微生物的相互作用；激素與環境因子對植物生長發育的調控。 先修科目：BCHE2030 基礎生物化學。</p>

BIOL3560	
Biology of Fungi and Non-Vascular Plants	真菌及非維管束植物生物學
<p>This course studies the diversity of fungi and non-vascular plants (algae and bryophytes) in terms of morphology, development and biochemistry. Their survival strategies in different ecological habitats and human exploitation of these organisms will also be discussed. Pre-requisite: LSCI1002 Introduction to Biological Sciences.</p>	<p>本課程學習真菌及非維管束植物(藻類和苔蘚植物)的形態，發育和生物化學等方面的多樣性。同時，本科討論它們在不同生態環境的生存策略和人類如何利用這些生物。 先修科目：LSCI1002 生物科學入門。</p>

BIOL3570	
Biology of Vascular Plants	維管植物生物學
<p>A study of pteridophytes, gymnosperms and angiosperms with emphasis on their functional morphology, life cycle, evolutionary features and ecological adaptations. This course includes anatomical study on structure and development of selected vascular plants. The economic importance of vascular plants</p>	<p>本課程討論蕨類、裸子及被子植物的形態功能、生活史、進化模式及生態適應。同時將探討某些維管植物的結構及分化過程。此外，維管植物的經濟價值亦屬本科討論範圍。 先修科目：BIOL3560 真菌及非維管束植物生物學。</p>

will also be discussed. Pre-requisite: BIOL3560 Biology of Fungi and Non-Vascular Plants.	
--	--

BIOL3610	
Invertebrate Form and Function	無脊椎動物形態及功能
The morphology, ecology, reproduction, development, life history and phylogeny of major groups of invertebrates will be examined. The function of organ systems will be discussed with reference to the adaptations to the mode of life of the animals. Pre-requisite: LSCI1002 Introduction to Biological Sciences or permission of instructor.	本課程探討各類主要無脊椎動物之形態、生態、生殖及發育、生活史及其種族發生之關係，各器官功能及其生活方式之相互適應。 先修科目：LSCI1002 生物科學入門 或經導師同意。

BIOL3620	
Vertebrate Life	脊椎動物學
Vertebrate Life is a course that deals with the evolution and phylogenetic relationships of vertebrates. This course will explore the morphological, anatomical, physiological, biochemical and behavioural characteristics of vertebrates, and discuss how these characteristics enable vertebrate animals to adapt to the environment and to maintain homeostasis. Pre-requisite: LSCI1002 Introduction to Biological Sciences and BIOL2210 Ecology or permission of instructor.	本課程討論脊椎動物演化和種系發展關係。本科探討脊椎動物之形態、解剖、生理、生化和行為的特徵，並討論這等特徵如何使脊椎動物達致適應環境和保持體內平衡。 先修科目：LSCI1002 生物科學入門及 BIOL2210 生態學或經導師同意。

BIOL3630	
Animal Physiology	動物生理學
Physiology is the study of body functions. Using both integrative and comparative approaches, this course covers different functions of animals such as neural conduction and integration, endocrine communication, muscle contraction, circulation, respiration, excretion, reproduction, and the maintenance of a stable internal environment. The adaptive and evolutionary changes in different groups of animals are also discussed and compared. Not for students who have taken FNESC4101 Human Physiology for Nutrition Studies I. Pre-	生理學是研究動物體功能的學科。本科採用綜合和比較方法討論動物的各種機體功能，包括神經傳導和整合、內分泌調控、肌肉收縮、循環、呼吸、排泄、生殖、以及內環境穩定之維持等。本科除側重生理學基本原理外，亦比較各類動物生理功能的演化和對環境的適應。 已修畢 FNESC4101 人類生理學（營養學專科）（一）之學生不得修讀此課程，先修科目：BIOL2120 細胞生物學 及 BCHE2030 基礎生物化學。

Course Descriptions of Biology Programme, CUHK (for BIOL-coded courses ONLY) (2021.08 uploaded)

requisites: BIOL2120 Cell Biology and BCHE2030 Fundamentals of Biochemistry.	
--	--

BIOL3710	
Marine Biology	海洋生物學
<p>This course gives an introduction to the physical, chemical and biological aspects of the marine environment, and to life in the oceans and coastal waters. The major groups of marine organisms will be treated, with a consideration of the factors influencing their distribution and abundance. Productivity of the marine environment and its present and future utilization by man will also be discussed. Pre-requisite: BIOL2210 Ecology.</p>	<p>本課程介紹海洋及沿岸水域之物理、化學及生物特徵，主要討論各類主要之海洋生物及影響其分佈及數量之各種因素，此外亦會論述海洋生產量可供人類現在或將來利用之各種用途。 先修科目：BIOL2210 生態學。</p>

BIOL4010	
Evolutionary Biology	演化生物學
<p>This course introduces students to the pattern and processes of evolution. The course begins with an introduction of the history and philosophy of evolutionary ideas, followed by the genetics of adaptation, natural selection and speciation, and then on to the geological record and the fossil record of origination and extinction, and finishes with a discussion of the principle and practice of phylogenetic analyses and the molecular basis of evolution. Case studies on the use of molecular data in the study of evolutionary processes, biogeography and the history of life (including human evolution) will be included. This course is specially designed for advanced level of undergraduates, not only because of the course content, but it requires the students to think and integrate knowledge learnt from different courses in biology, molecular biology, cell biology, biotechnology, genetics, ecology, etc. In addition, a problem will be initiated by students and to be solved via searching for knowledge and information from diverse channels not only limited to scientific journal articles. Furthermore, a voluntary/optional field trip is organized for the students to define the problems of their own interests. These will help students to understand and analyse the problem from various aspects and multiple angles. Feedbacks will be provided throughout the course at different checkpoints. Prerequisite: BIOL2210 Ecology or BIOL2310</p>	<p>本課程介紹演化的過程及機制。開始時先說明演化論的概念及發展歷史，再深入解釋遺傳學、適應、物競天擇和種化等相關理論，再以化石及地質記錄印證物種的起源與滅絕，最後討論如何使用類源關係及分子遺傳等方法來研究生物的演化，並以實例（包括人類的演化）說明如何以分子遺傳數據探究生命的歷史、生物演化的過程及解釋物種地理分佈等現象。先修科目：BIOL2210 生態學或 BIOL2310 普通與分子遺傳學 或 BIOL2410 普通遺傳學。</p>

General and Molecular Genetics or BIOL2410 General Genetics.	
---	--

BIOL4012	
Field and Environmental Biology	野外考察及環境生物學
<p>This course provides an opportunity for students to conduct field related exercises in aquatic and terrestrial environments. Students will develop practical skills in ecological and environmental evaluation of different habitats and learn the techniques used in data analysis. Field trips to different habitats will normally be conducted on Saturdays.</p> <p>Co-requisites: BIOL2210 Ecology and BIOL3710 Marine Biology.</p>	<p>此課程為學生提供一個野外考察的機會，考察地方包括海洋及陸上不同的生境。學生可在不同的生境作生態研究及環境評估，藉此學習到實用的野外考察技術及數據採集與分析方法。野外考察一般都會在星期六進行。</p> <p>同修科目: BIOL2210生態學及BIOL3710海洋生物學。</p>

BIOL4032	
Physiological Investigations	生理學探索
<p>This course let students learn some key physiological phenomena in both plants and animals through experiments. Students will learn and practice experimental skills in physiology including experimental design and data analysis. Prior completion or concurrent registration of BIOL3530 Plant Physiology and/or BIOL3630 Animal Physiology is highly recommended.</p> <p>Pre-requisite or Co-requisite: BIOL3530 Plant Physiology or BIOL3630 Animal Physiology.</p>	<p>本課程主要讓學生通過具體的實驗操作去觀察植物和動物的一些重要生理現象，並從中學習並掌握從事生理學研究的基本實驗技能，包括生理學實驗的設計和數據分析。</p> <p>先修或同修科目: BIOL3530 植物生理學或 BIOL3630 動物生理學。</p>

BIOL4120	
Developmental Biology	發育生物學
<p>This course deals with the principles and concepts of developmental biology. Topics include analysis of fundamental embryological processes and consideration of major developmental biological problems such as cell fate determination, cell differentiation, pattern formation, morphogenesis, organogenesis, hormonal and environmental control of development in model organisms. Selected current topics and technology in developmental biology will also be discussed. Pre-requisite: BIOL2120 Cell Biology.</p>	<p>本課程研討發育生物學之基本原理及概念，內容除了分析胚胎發育的基本過程外，並探討發育生物學的主要課題，包括模式生物發育過程中的細胞命運決定、細胞分化、模式形成、形態發生、器官形成、激素調節和環境控制。此外，亦討論當前發育生物學領域的最新技術和熱門課題。先修科目: BIOL2120 細胞生物學。</p>

BIOL4220	
Environmental Biotechnology	環境生物技術學
<p>This course deals with biotechnological principles and techniques, and their applications to resolve environmental problems. Underlying principles of biodegradation and biotransformation, and basic techniques such as culture collection and cell immobilization are introduced. Case studies emphasize insect control, waste and wastewater treatment, energy production and cleanup of contaminated soils. Pre-requisite: BIOL2120 Cell Biology and BCHE2030 Fundamentals of Biochemistry.</p>	<p>本課程研討生物科技的原理和技術，及其在解決環境問題上的應用。介紹生物降解及轉化的原理及品種保藏和細胞固定法的技術。就昆蟲控制、廢物及廢水處理、能量生產及污染土壤清理等問題，以個案形式加以深入討論。先修科目：BIOL2120 細胞生物學及 BCHE2030 基礎生物化學。</p>

BIOL4230	
Global Change Biology	全球變化生物學
<p>This course will discuss the impact of global environmental changes on biological systems and their ecosystem services. We will focus on how global warming, and associated changes such as altered rainfall, sea level rise, and ocean acidification, have changed the biological communities of the Earth's various ecosystems, from forests to coral reefs. The impact at biological levels from molecules to cells, organisms, populations, and communities will be explored. Models for projecting future changes in Earth systems, biological communities and ecosystem services under climate change will be introduced. While the major focus is on climate change, other aspects of global environmental change, such as habitat deterioration, will also be considered. Students are required to present case studies of global change biology based on latest research findings. Pre-requisite: BIOL2210 Ecology.</p>	<p>此課程將探索全球環境變化對生物體和生態系統服務功能產生的影響。課程主要講解全球變暖及其相關現象如降雨量變化、海平面上升、海洋酸化如何影響森林、珊瑚礁等各個生態系統的生物群落。課程會涉及分子、細胞、個體、種群、群落不同的生物層面，並介紹在全球氣候變化的大背景下用於預測地球系統、生物群落和生態系統服務功能變化趨勢的模型。除“氣候變化”的主題之外，課程也會探討全球環境變化導致的生境惡化等問題。本課程要求學生基於最新研究成果對全球變化生物學進行案例分析。先修科目：BIOL2210 生態學。</p>

BIOL4260	
Conservation Biology	保育生物學
<p>This course aims to provide an in-depth discussion of problems and solution of environmental and biodiversity conservation, including student presentations on endangered species around the globe. Students taking this course need to have fundamental knowledge of biology and ecology. Major topics include conservation genetics, techniques in assessing biodiversity, global biodiversity loss, design and role of reserves and protected areas, wildlife conservation, habitat restoration and conservation policy and laws. Emphasis will be given to problems of critical importance to Hong Kong and the world today. Not for students who have taken ENSC4260 Conservation Biology. Pre-requisite: BIOL2210 Ecology.</p>	<p>本課程將深入探討環境保護之問題及方法。修讀此課程之學生須對生物學及生態學有基本認識。本課程內容包括：保護遺傳學原理、生物多樣性的評估、生境的斷裂問題、自然保護區的設計及功能、野生動植物的保育、生境修復，及有關環保的法律條文和規章，尤其著重世界與香港息息相關的問題。</p> <p>已修畢 ENSC4260 保育生物學之學生不得修讀此課程，先修科目：BIOL2210 生態學。</p>

23 Jan. 2019

BIOL4310	
Human Genetics	人類遺傳學
<p>This course is designed for students who are interested in human genetics. Students enrolled in this course will study the principles of inheritance which concern with the most interesting organism – the human being. Topics include the structure of the human genome (chromosomes), different modes of inheritance, epigenetics, variations and their uses in human genetics studies, aberrations and diseases, and genetics of various biological processes or diseases. The future outlook of human genetics and practical applications will also be discussed. Prerequisite: BIOL2310 General and Molecular Genetics or BIOL2410 General Genetics.</p>	<p>本課程為對人類生物學有興趣的學生而設計的課程。修讀者將會探討一切有關人類遺傳學的原理，主題包括人類基因組（染色體）的結構、不同的遺傳模式、表觀遺傳學、變異及其在人類遺傳學研究中的應用、畸變和疾病、以及各種生物過程或疾病的遺傳學。此外，人類遺傳學的未來及其應用之進展也會討論。</p> <p>先修科目: BIOL2310 普通與分子遺傳學 或 BIOL2410 普通遺傳學。</p>

BIOL4420	
Marine Microbial Ecology	海洋微生物生態學
<p>This course brings the students to the marine microbial biosphere. Microbes are the engines that drive carbon and nutrient cycles in the ocean, and influence the health of marine plants and animals. In this course, we will discuss major concepts in ecological studies of microbes in the ocean, the way microbes function in their natural environments, and how their activities influence ecosystem functioning, global climate and the Earth as human habitat.</p> <p>Pre-requisite: BIOL3410 General Microbiology.</p>	<p>本課程將學生帶入海洋微生物生物圈。微生物是驅動海洋碳循環和營養循環的動力，也影響海洋動植物的健康。在這個課程中，我們將討論海洋微生物生態學的主要概念，微生物如何在自然環境中發揮作用，以及它們的活動如何影響生態系統功能，全球氣候和地球作為人類的棲息地。</p> <p>先修科目：BIOL3410 普通微生物學。</p>

BIOL4510	
Hong Kong Flora and Vegetation	香港植物及植被
<p>This course is aimed to train students with capacity in various aspects of local plants, including knowledge of plant taxonomy, skills of field studies, knowledge transfer of botany and career development. This course consists of lectures, field trips and independent projects.</p> <p>Prerequisite : LSCI1002 Introduction to Biological Sciences</p>	<p>本課程的在培訓學生對香港植物不同範疇的知識和經歷，包括植物分類、野外鑒定、植物學知識轉移和職業發展等。教學模式包括課堂、野外實習及專題研究。</p> <p>先修科目：LSCI1002 生物科學入門。</p>

BIOL4520	
Plant metabolism and metabolic engineering	植物次生代謝及代謝工程
<p>This course covers the main groups of secondary metabolites of plants from a biochemical and biosynthetic perspective, with references to how genetic engineering can be used to manipulate the levels of secondary metabolites with economic value, as well as those of importance to human health and diet. The course defines the major classes of secondary metabolites, their biosynthetic pathways, the biological functions of secondary metabolites in defense against biotic and abiotic stresses, and finally the main approaches for metabolic engineering to achieve a targeted production of high-value secondary metabolites.</p> <p>Pre-requisite: BCHE2030 and BIOL2120</p>	<p>本課程從生化和生物合成的角度涵蓋了植物次生代謝物的主要類別，並介紹了如何利用基因工程來操縱具有經濟價值的次生代謝物的水平，以及對人類健康和飲食重要的代謝物。該課程定義了次要代謝物的主要類別，它們的生物合成途徑，次生代謝物在抵禦生物和非生物脅迫方面的生物學功能，最後定義了代謝工程學的主要方法，以實現有針對性的高價值次生代謝物生產。</p> <p>先修科目: BCHE2030 and BIOL2120</p>

BIOL4901	
Senior Experimental Project I	實驗專題討論 I
In this course, students are to carry out an independent research project. The project topic will be decided by the supervisor(s) or jointly by both the supervisor(s) and the student. To fulfill the course requirement, students are required to discuss their progress with their supervisors regularly and submit a research proposal at the end of the term.	本課程學生將在教師指導下進行個人專題科學研究。研究課題由教授提供或由學生與指導教授共同討論後決定。學生須定期與導師討論其研究結果，並於學期結束前提交一份研究計劃。

BIOL4902	
Senior Experimental Project II	實驗專題討論 II
Students are required to discuss their progress with their supervisor(s) regularly and submit a progress report at the end of the term. Students who will not be enrolled in BIOL4903 are required to submit a final report in the form of a manuscript and give an oral presentation.	學生須定期與導師討論研究進展和結果，並在學期結束前提交研究進展報告。不繼續選修 BIOL4903 的學生須在學期結束前提交一份書面報告，及就論文內容作口頭匯報。

BIOL4903	
Senior Experimental Project III	實驗專題討論 III
In this course, students continue to work on and complete the research project from BIOL4902. Student should discuss with their supervisor(s) and analyze relevant data, formulate conclusion. Students should submit a final report in the form of a manuscript and give an oral presentation at the end of the term. *Prerequisite: BIOL4902.	本課程學生須繼續為其 BIOL4902 開展的專題研究搜集及分析相關實驗數據。學生須與導師討論研究結果及作出結論，並在學期結束前提交一份合符科技論文水平的書面報告，及就論文內容作口頭匯報。 *先修科目: BIOL4902

Updated in May 2018

BIOL4906	
Internship	專題實習
In this course, students have the opportunity to gain practical experience working in the government, private companies or non-government organizations. Internship projects can be held either locally or overseas, but must be approved by the Programme. Students are required to serve at least 160 hours and submit a written report for assessment.	本課程旨在提供學生於暑期時在政府部門、公司或非政府組織實習，參與工作或科研。所有研究或實習項目，可在本地或海外進行，但必須得學系認可。學生須實習最少 160 小時，並提交報告。

Updated in May 2018

BIOL4907	
Field Study	實地研習
This course gives students an opportunity to supplement what they have learnt from biology courses in the format of a local or overseas field trip during summer. Students are required to submit a proposal, participate actively in all activities throughout the field trip, submit an individual report and present a seminar for assessment. The field trip must be approved by the Programme.	本課程旨在提供學生於暑期中在本地或海外實地考察，應用及增加在生物課堂上的知識。學生須提交研究計劃、積極參與當中的所有活動，並於考察完結後提交報告及作口頭報告。實地考察須得學部認可。