FACULTY OF SCIENCE

The Faculty of Science offers the following courses in 2010-2011. Details of the course descriptions are available at: http://web.science.hku.hk:8080/sr/servlet/enquiry

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Department of Biochemistry

BIOC1001 Basic biochemistry (6 credits)

This course is designed to present an overview of biochemistry of fundamental importance to the life process. We aim to develop appreciation of the basics in biochemistry as a common ground for science and non-science students to progress into their areas of specialization. Students intending to pursue further studies in Biochemistry and Molecular Biology will find this course particularly helpful.

BIOC1003 Introduction to molecular genetics (6 credits)

The objectives of this course are to provide students with basic and up-to-date knowledge on the structures and functions of nucleic acids, to give students a general picture of the molecular process of gene expressions, and to introduce students to recombinant DNA technology.

BIOC2601 Metabolism (6 credits)

This course aims to provide the basic concepts of metabolism: the events and their importance in relation to the survival of living organisms. Taken together with BIOC1001 and BIOC2602, this will lay the foundation for the more advanced courses offered in the Biochemistry discipline.

BIOC2602 Understanding metabolic diseases (6 credits)

To strengthen students' understanding of metabolism. By using a problem-based learning (PBL) approach, students are trained in critical thinking and problem-solving skills. Students will be able to grasp the major effects on metabolic integration and control and they can use these concepts with greater confidence and success in approaching new problems and new areas of study.

BIOC2603 Principles of molecular genetics (6 credits)

To provide basic knowledge on molecular genetics, illustrating modern concepts with current experimental approaches and computer-assisted programmes. Together with BIOC3613 and BIOC3609, a comprehensive background on molecular genetics is provided for advanced study and/or research in molecular biology.

BIOC2604 Essential techniques in biochemistry and molecular biology (6 credits)

To give students a general overview of different experimental approaches and model systems, and to provide students with hands-on experience in basic biochemical and molecular techniques.

BIOC2616 Directed studies in biochemistry (6 credits)

To enhance students knowledge of a particular topic and the students self-directed learning and critical thinking skills.

BIOC3608 Introduction to bioinformatics (6 credits)

This course will examine existing bioinformatics tools for DNA and protein sequence analysis. The underlying principles of these analysis programs and services will be presented. Students will learn how to retrieve, analyze, and compare protein and DNA sequences using bioinformatics tools available on the World Wide Web.

BIOC3609 Molecular medicine (6 credits)

To provide up-to-date knowledge of the molecular and genetic basis of human diseases including cancer, thereby preparing the students for a career in medical molecular biology, biotechnological, pharmaceutical and genome research.

BIOC3610 Advanced biochemistry I (6 credits)

This course aims at providing students an in-depth understanding of fundamental principles applicable in modern biochemistry. This course is particularly useful for students interested in research or intending to develop a career in biomedical sciences.

BIOC3611 Advanced biochemistry II (6 credits)

This course is aim at providing students with an up-to-date knowledge of protein biochemistry from sequence to structure and disease; realizing the importance of kinetics in cellular function and an appreciation of the technological advances in the characterization of macromolecules.

BIOC3613 Molecular biology of the gene (6 credits)

To provide an up-to-date knowledge of molecular biology, especially with respect to the regulation of eukaryotic gene expression, molecular embryology.

BIOC3614 Biochemistry project (12 credits)

To enable students to acquire the basic skills in scientific research: literature search, critical reasoning, communication, teamwork and time management. The course is particularly useful for those students who intend to pursue a career in life science.

BIOC3615 Advanced techniques in biochemistry & molecular biology (6 credits)

This is an advanced experimental-based course for students majoring in Biochemistry and related disciplines. The aim is to provide the necessary training for students to pursuit postgraduate research education and potential employment in a scientific laboratory/industry environment.

BIOC3988 Biochemistry internship (6 credits)

This course aims to offer students the opportunities to gain work experience in the industry related to their major of study. The workplace learning experience would be of great benefit to the students to apply their knowledge gained in the study to the real work environments. Students have to take on at least 160 hours of internship work either within the University or outside the University arranged by the School/Departments.

School of Biological Sciences

BIOL0118 Bioethics (6 credits)

The aim is to explore the ethical implications of the latest major advances in biology and medicine.

BIOL0120 The gene (3 credits)

The objective is to expose students to the impacts of genes to the society. Recent completion of the human genome and many agricultural crops and animals genomes, it brings not only promises of a better quality of life as well as lots of technical and ethical issues/challenges that general public need to deal with. The goal of this course is to open up students from all backgrounds to this basic unit of inheritance called the gene and its impact on various scientific and social disciplines.

BIOL0126 Fundamentals of biology (6 credits)

This course is designed to provide students a general concept of the various disciplines of biology and prepare them for further intermediate and advanced courses in biology. It takes a systematic approach to look at the key principles that govern the survival of life forms.

BIOL0127 Contemporary nutrition: insights and controversies (3 credits)

What you eat greatly affects your well-being. Everywhere we go, we are bombarded by different messages, from vitamins to functional food products, on how food components or treatments impact on body functions and health. How reliable is the information from the mass media? Are these facts or myths? This course aims to provide health conscious individuals the basic knowledge to decipher information related to nutrition and health. Such knowledge is essential to the building of good eating habits that could promote health for a lifetime.

BIOL0135 Introductory microbiology (6 credits)

To introduce students to the diversity and function of microorganisms; and relate this to their importance in the natural environment, disease and public health, food production and spoilage and the biotechnology industry.

BIOL0600 Ecology of Hong Kong (6 credits)

This residential field course aims to explore the ecology and biodiversity of terrestrial, marine and freshwater environments in Hong Kong, and the efforts being made to conserve them. Students will visit a variety of habitats, and observe directly the main environmental factors that prevail in each of them so as to gain a first-hand understanding of Hong Kong's ecology.

BIOL0604 Evolutionary diversity (6 credits)

To provide students with an introduction to the diversity of plant and animal life. Recent research has resulted in fundamental changes in our understanding of evolutionary history (phylogeny). Current evolutionary trees will be used as the basis for a survey of different groups in phylogenetic sequence, and for understanding how structures, processes and behaviours have changed through time.

BIOL1106 Genetics (3 credits)

The objective of the course is to provide an introduction to the various aspects of genetics. At the end of the course students are expected to know the fundamentals of classical, population and molecular genetics.

BIOL1122 Functional biology (6 credits)

The course is designed to provide an introduction to modern developments in experimental biology through an integrated approach. Life processes will be examined at the molecular, cellular and organismic level.

BIOL1125 Introduction to biochemistry (6 credits)

This course is designed to provide undergraduate (non-biochemistry major) an overview of fundamental concepts in biochemistry as well as hands-on experience in biochemical techniques.

BIOL1133 Biological sciences laboratory course (6 credits)

The aim is provide students a comprehensive training in basic laboratory techniques used in modern biological studies. The course will cover a number of techniques used by molecular biologists and microbiologists to conduct scientific research.

BIOL1514 Nutrition and metabolism (6 credits)

This is an independent course compulsory for students in the Food & Nutritional Science programme, but also opens to students in other life sciences disciplines. The fundamental concepts in nutrition will be introduced. An integrated approach will be used in discussing the interactions between diet and intermediary metabolism.

BIOL1528 Food chemistry (6 credits)

The course is designed to give students a basic understanding of chemistry of the major and minor components in food systems and practical training related to food science and nutrition.

BIOL2111 Molecular microbiology (6 credits)

This course is intended for biology, biotechnology and biochemistry students who would like to understand the modern fundamentals of microbiology. At the end of the course the students are expected to know the physiological, biochemical and molecular aspects of microbiology.

BIOL2112 Plant physiology (6 credits)

To give an understanding of plant processes such as plant growth and development and their regulatory mechanisms.

BIOL2115 Cell biology & cell technology (6 credits)

To provide a coherent understanding of the structure and function of cells, and the principles and applications of cell culture and instrumentation in biology and biotechnology.

BIOL2116 Genetics I (6 credits)

This is the first of an integrated pair of courses, Genetics I and Genetics II, aiming to provide balanced coverage of many areas in genetics. The focus of Genetics I is on the basic principles of genetics. Genetics II will cover more advanced topics of modern genetics.

BIOL2117 Genetics II (6 credits)

This is the second of an integrated pair of courses, Genetics I and Genetics II, aiming to provide balanced coverage of many areas in genetics. The focus of Genetics I is on the basic principles of genetics. Genetics II covers more advanced topics of genetics.

BIOL2203 Reproduction & reproductive biotechnology (6 credits)

The course will provide a comprehensive overview on modern concepts and recent advancements in reproductive biology & biotechnology.

BIOL2205 Immunology (6 credits)

To provide a broad understanding of the animal immune system. Topics will also include the application of a variety of immunological methods to research and disease diagnosis.

BIOL2207 Endocrinology: human physiology II (6 credits)

To provide an advanced course on hormones and how they regulate metabolism/growth, reproduction and water/salt homeostasis in our body.

BIOL2215 Animal physiology: functional interactions with environment (6 credits)

The course covers the major aspects of animal physiology for adaptation in different habitats. Stress will be given to the functional interactions between animals and the environment, especially on the mechanisms by which animals obtain resources for survival from the environment, detect environmental changes via sensory structures, and respond to adversities in the environment by altering their body forms & functions.

BIOL2218 Human physiology (6 credits)

The course covers major aspects of the physiology of the human body using an integrated approach. After completing this course, students will have acquired fundamental principles of how the body works. Students interested in nutrition and human biology will find this course most useful.

BIOL2301 Protein structure and function (6 credits)

To provide students with a good understanding of protein structure, how structure subserves function, and the methods for study of both. This course provides a strong foundation for advanced courses in biochemistry and biotechnology.

BIOL2303 Molecular biology (6 credits)

To provide students with recent knowledge in molecular biology with special emphasis on the study of gene structure and function at the molecular level.

BIOL2318 Biological sciences field course (6 credits)

This course is offered as an experiential learning experience and will require intense study of a topic during a field course, inside or outside Hong Kong.

BIOL2320 Directed studies in biological sciences (6 credits)

Students will undertake a dissertation on an agreed topic or carry out a small scale project in biological sciences. The student will develop scientific writing and presentation skills.

BIOL2324 Microbial physiology and biochemistry (6 credits)

Microbial physiology and biochemistry serves as a basis for many of the sub-disciplines of microbiology, including mycology, virology, immunology, and medical, food and industrial microbiology. This course is designed for students to obtain a profound understanding on the constituents, metabolisms, and functions of microbial cells. After completing this course, students will have acquired fundamental principles of microbial physiology and biochemistry, and be able to relate these knowledge to various applications of microorganisms.

BIOL2503 Grain production & utilization (6 credits)

To provide a broad understanding of the utilization and significance of the major grains in the food industry and in human health and nutrition.

BIOL2515 Food microbiology (6 credits)

This course provides the key concepts and principles of food microbiology with special emphasis on the interaction between microorganisms and food. Microbial food production, microbial food spoilage and foodborne diseases will be discussed in detail.

BIOL2529 Food and nutritional toxicology (6 credits)

This course will provide students basic principles of food and nutritional toxicology with primary emphasis on absorption, metabolism and excretion of food toxins, allergenic and toxic constituents in plant, animal, marine and fungal origin, the role of diet and nutrients in mutagenesis and carcinogenesis, food processing induced toxins and the procedures, laws and regulation of safety assessment of foods including food additives, environmental contaminants, pesticides and antibiotic residues.

BIOL2530 Molecular biology and nutrigenomics (6 credits)

The emergence of a new science called Nutrigenomics has increased our understanding of how nutrients modulate gene expression and ultimately influence cellular metabolism. Nutrigenomics will lead to evidence-based diet intervention approach for the maintenance of health and disease prevention. The course supports two learning goals: 1) to provide students with the knowledge on the principles of molecular biology and gene regulation and 2) for students to develop an understanding of genomics with respect to diet.

BIOL2531 Principles of Chinese medicinal diet (6 credits)

This course aims to provide basic knowledge on Chinese medicated diet. Illustrating historical and modern concepts of Chinese medicated diet and encourage research and development with current experimental approaches. This is a valuable course for students in the Food and Nutritional Science programme, but also opens to students in other programmes.

BIOL2532 Diet and disease (6 credits)

This course aims to provide the students the knowledge on diseases associated with diet and basic dietetics.

BIOL2533 Nutrition and life cycle (6 credits)

Nutritional needs vary throughout different stages of the life cycle. This course aims to provide the students the fundamental knowledge of the functional roles of essential nutrients and highlight the nutritional concerns during specific times of growth, development, and aging.

BIOL2535 Food processing and engineering laboratory course (6 credits)

To provide students with basic principles and methodology of food processing and preservation technology as well as physical and engineering principles relevant to the food industry. Students will be able to gain hand on experience with food processing and preservation techniques.

BIOL2537 Laboratory in nutritional science (6 credits)

This course aims to help students to understand the science of nutrition and human health through experimental investigation. With emphasis on human nutrition related experiments and training of students to acquire literature search skills, critical thinking, data analysis and processing and writing their nutritional findings scientifically.

BIOL2538 Nutraceuticals and functional foods (6 credits)

To provide students a fundamental understanding of the rapidly emerging nutraceutical/functional food industry with an emphasis on the history, regulation, chemical foundation and quality control of natural health products and their roles in disease prevention.

BIOL2606 Environmental microbiology (6 credits)

To familiarize students with the role of various microorganisms in natural process which affect our environment, such as recycling of chemical elements, interactions with plants and animals, and the way in which they carry out biodegradation of environmentally important pollutants. Selective groups of microorganism will be examined in detail for their biochemical processes. Key concepts are illustrated with known examples and cases.

BIOL2607 Fish biology (6 credits)

To acquaint students with the principles governing interrelationships among fishes as well as with the biotic and abiotic aspects of their environment thereby to provide an understanding of the factors determining species population dynamics and multispecies interactions. To understand species diversity in relation to conservation and management challenges in different assemblages with emphasis on coral reef assemblages, and an introduction to local reef fishes.

BIOL2608 Biometrics (6 credits)

To introduce students to experimental design and statistical data analysis at an elementary to intermediate level, with an emphasis on practical applications of statistical methods to experimental and observational data in biology, ecology and environmental sciences. A range of topics will be addressed, particularly those involving descriptions of environmental monitoring, questionnaire survey, biodiversity survey, and ecological impact assessment as well as how to apply statistics in frontier biological research. To illustrate each statistical method, examples will be drawn from real cases.

BIOL2610 Biological oceanography (6 credits)

This course provides an introduction to the physical, chemical, geological and biological processes that occur in oceans and explains the importance of the oceans to all life on earth. The emphasis is on how marine organisms interact with each other and with their environment by considering various ecosystems, as well as the adaptations of marine life to their particular habitats. Specific examples from South East Asia, the South China Sea and Hong Kong will be included.

BIOL2611 Systematics & phylogenetics (6 credits)

To give students an understanding of the principles of systematics and phylogenetics and an appreciation of current trends and controversies. Systematics forms an invaluable grounding for many fields of biology (including anatomy, ecology, population biology and evolutionary biology), and enables the integration of a wide range of techniques (including anatomy, biochemistry, chemistry, molecular biology, cytology, palaeontology and ethology).

BIOL2612 Conservation ecology (6 credits)

To introduce students to the theory and practice of conservation and to provide students with a thorough understanding of practical, economic and management skills required for proficiency in conservation ecology. Our ultimate aim is to promote an understanding of the natural biodiversity, the threats to it, and the best ways to manage them. We hope these will be your aims too, and that you will be able to use the skills and knowledge you learn from the course to reduce the local, regional and global loss of biodiversity.

BIOL2614 Environmental toxicology (6 credits)

To introduce students to the basic principles of environmental and ecological toxicology by analysis of the fate of pollutants in lithosphere, hydrosphere, atmosphere and biosphere. Mechanisms of toxicity as dose-response will be analyzed through adsorption, metabolism, toxicity and elimination. Major metabolic processes and enzymes involved will be highlighted. Specific cases of toxicity will be presented and discussed.

BIOL2617 Coastal ecology (6 credits)

To examine the communities of coastal systems: their distribution, composition and the factors which regulate them. This course will examine, using an experimental approach, patterns exhibited by a range of shores and the deterministic and stochastic processes that create and sustain them. Hong Kong shores will be used as examples but comparisons will be drawn from the coastlines of the world.

BIOL2619 Terrestrial ecology (6 credits)

To enable motivated students to acquire the knowledge and skills needed to solve real problems in terrestrial ecology.

BIOL2621 Plant structure & evolution (6 credits)

To survey the form and function of the vascular plant body, with particular emphasis on the evolutionary significance of structures. This course forms a basis for understanding plant physiology, ecology, systematics and phylogenetics.

BIOL2622 The biology of marine mammals (6 credits)

Few other groups of animals have captured the public's imagination the way marine mammals, especially whales and dolphins have. This course covers the evolutionary biology, ecology, behaviour, and conservation of marine mammals: whales, dolphins and porpoises (cetaceans), seals, sea lions, fur seals and walruses (pinnipeds), manatees and dugongs (sirenians). Students will learn to understand the ecology of mammalian life in the aquatic environment, their role in the marine ecosystem, their behavioural complexity, and what are the current threats to these animals in the human-dominated world.

BIOL3214 General virology (6 credits)

This Course provides the fundamental principles of virology so that students can understand the pathogenesis of major viral diseases that affect animal health. The course will prepare students for profession or graduate work in virology, medicine and biotechnology.

BIOL3219 Clinical microbiology and applied immunology (6 credits)

The aim is to provide students the knowledge on the practical applications of immunology and microbiology in biological research, clinical analysis and disease diagnosis.

BIOL3307 Biotechnology industry (6 credits)

This course provides an overview of the various fields of biotechnologies, the development of a biotechnology product, and the operation of biotechnology companies.

BIOL3315 Animal biotechnology (6 credits)

This course discusses the key concepts and principles involved in animal biotechnology, and their applications in animal industry and molecular medicine.

BIOL3316 Plant biotechnology (6 credits)

This course covers the principles and applications of plant biotechnology. The significance of plant biotechnology in agriculture and its emerging role in molecular farming for production of biopharmaceuticals and other high-value proteins will be discussed.

BIOL3317 Microbial biotechnology (6 credits)

This course is intended for students who would like to understand the application of modern microbiology in biotechnology. The microbial systems being used include different types of viruses, bacteria, fungi and algae. At the end of the course the students are expected to know the parameters and conditions that affect the yield of production and the systems available for the expression of various types of biotechnology products.

BIOL3321 Biological sciences project (12 credits)

To provide experience of biological research by planning and carrying out a project under the supervision of a member of staff.

BIOL3325 Molecular phylogenetics and evolution (6 credits)

The purpose of this course is to provide a comprehensive overview of state-of-the-art molecular systematics and phylogenetic research, focusing on in depth coverage of the latest techniques. The treatment of theoretical issues in formal lectures is coupled with practical workshops.

- acquisition of the sequences from the databases
- DNA and protein sequence assembly and alignment
- phylogeny reconstruction using parsimony, distance based, and maximum likelihood approaches
- introduction to relevant software for phylogenetics
- methods for the evaluation of phylogene trees

BIOL3526 Advanced laboratory in nutritional science (3 credits)

This course is a follow-up to BIOL2518. It aims to help students to understand the science of nutrition and human health through experimental investigation. Emphasis will be on human nutrition related experiments and training of students to acquire the process of data collection, data analysis, critical thinking and writing the findings in a scientific manner.

BIOL3527 Food safety and quality management (6 credits)

To provide exposure to some key management concepts used to produce safe high-quality food products that will succeed in the marketplace. To introduce students to the use of the business case-study method in individual, team and class-based learning.

BIOL3538 Food product development (6 credits)

To introduce the key concepts and techniques used in food product development. Students will work in small groups to design, develop and produce a new food product. Appropriate for students in Food and Nutritional Science Programme or Major.

BIOL3621 Fisheries and mariculture (6 credits)

Theoretical and practical aspects of marine fisheries and mariculture will be covered to provide an understanding of the condition of global regional and local fishery resources as well as the importance of biological and ecological studies to their management. The role of mariculture in global fish supply will be examined and local fishery and mariculture examples provided.

BIOL3622 Ecological impact assessment (6 credits)

The basic aim of this course is to introduce students to the principles, practices and problems of Ecological Impact Assessment (EcoIA).

BIOL3624 Environmental monitoring and remediation techniques (6 credits)

To introduce the standard methods in environmental monitoring, and the scientific basis of practical monitoring programmes and techniques used. The focus of the course will be on both the chemical analyses and applications of new environmental technologies available in cleaning up. Local examples will be used to illustrate the power of environmental monitoring and identification of pollution sources, as well as the success of implementation of treatment techniques in cleaning up contaminated sites.

BIOL3988 Biological sciences internship (6 credits)

This course aims to offer students the opportunities to gain work experience in the field of biological sciences that are related to the major(s) of study.

ENVS1002 Environmental life science (6 credits)

This is an introductory course intended for students who wish to understand the fundamentals of environmental biology/life science. Here you will learn about the various biological/ecological

principles and concepts of environmental science which are needed for critical discussion and evaluation of current global environmental issues including human population growth and climate change.

ENVS2003 Demographic principles in population and evolutionary biology (6 credits)

Demography determines the interplay between wildlife populations and environments. This course explains how populations increase, decrease, stabilize, destabilize or die out. It explains how life histories themselves adapt, and emphasizes the common demographic principles in both population dynamics and evolutionary change. This introductory course is part of the major in Environmental Science, but will be of value and interest to science students generally, complementing courses in Ecology & Biodiversity particularly well.

Department of Chemistry

CHEM0003 Chemistry and daily life (3 credits)

This course is designed as an elective for students in all disciplines and all years without strong chemistry background. It gives an overview of some important chemical aspects that we encounter in our daily life.

CHEM1002 Chemistry: principles and concepts (6 credits)

To provide basic knowledge of modern chemistry. This course is a pre-requisite for the advanced chemistry courses.

CHEM1003 Chemistry: the molecular world (6 credits)

To provide students with the basic principles and knowledge of inorganic and organic chemistry and to introduce their relevance to biological processes and materials science. This course provides the foundation for further studies in both inorganic and organic chemistry.

CHEM1004 Chemistry: an experimental science I (6 credits)

To provide students with intensive hands-on training of basic experimental chemistry techniques, and also the opportunity to develop observational and critical thinking skills that are essential for carrying out experiments or scientific investigations. The course covers principles & applications of chemical laboratory skills & techniques: standardization and calibration; volumetric analysis; preparation, purification, and characterization of chemical substances; ultraviolet-visible spectrophotometry; infrared spectroscopy; gas & liquid chromatography; statistical data treatment & evaluation.

CHEM1006 Introduction to forensic science (3 credits)

This course is designed as an elective course to provide a basic foundation in the field of forensic science for students with general science or equivalent background. Without having to be major in chemistry, the students are allowed to learn and experience the various methods used in investigating crimes.

CHEM1009 Basic chemistry (6 credits)

This course is designed for non-chemistry major students covering basic principles of chemistry.

CHEM1401 Fundamentals of organic chemistry (6 credits)

The major objective of this course is to give the students a basic understanding of organic chemistry, especially in the context of daily life. This will be achieved through the introduction of the chemistry of organic functional groups that form the basis of organic molecules. The concepts presented in the lectures will be reinforced by a series of laboratory experiments.

CHEM1410 Basic chemistry principles for pharmacy students (6 credits)

This course is designed to introduce basic principles of chemistry to Bachelor of Pharmacy students.

CHEM2003 Introductory instrumental chemical analysis (6 credits)

This course is designed for non-chemistry major students covering basic principles of separation and spectroscopy for chemical analysis. This course provides a general foundation for further studies in pharmacology, life and environmental sciences.

CHEM2102 Environmental chemistry (6 credits)

This course introduces students to Environmental Chemistry and enables them to understand the chemical principles involved in various environmental phenomena and processes.

CHEM2103 Chemical process industries and analysis (6 credits)

To familiarize with typical chemical industries important in local and global economy. To understand the technology of chemicals manufacturing and chemical processes in general industry.

CHEM2109 Introduction to materials chemistry (6 credits)

This course provides an introduction to materials chemistry. Some basic material characterization techniques will also be introduced. This course is essential for students who wish to take advanced materials course.

CHEM2111 Directed studies in chemistry (6 credits)

This course is designed for second year students who would like to take an early experience on research. It offers students an opportunity to carry out small scale chemical projects by themselves.

CHEM2202 Chemical instrumentation (6 credits)

To cover the basic principles and applications of chemical instrumentation. This course aims to provide working knowledge, in addition to the principles, of instruments that are commonly used in chemical laboratories.

CHEM2207 Food and water analysis (6 credits)

To cover areas in the application and new methodology development in Analytical Chemistry with focus on food and water analysis.

CHEM2302 Intermediate inorganic chemistry (9 credits)

To provide a more detailed treatment of general inorganic chemistry suited to the needs of those intending to extend their studies in chemistry.

CHEM2402 Intermediate organic chemistry (9 credits)

This course is a continuation from Basic Organic Chemistry. Together they provide a solid foundation of organic chemistry.

CHEM2410 Analytical techniques for pharmacy students (6 credits)

This course is designed for Bachelor of Pharmacy students to provide an overview of different analytical and measurement techniques that are important to pharmacology and pharmaceutical sciences.

CHEM2503 Intermediate physical chemistry (9 credits)

This course presents a more detailed treatment of general physical chemistry topics in order to provide a solid foundation for those students intending to extend their studies in chemistry further. This course would stand on its own.

CHEM2509 Principles of chemical biology (6 credits)

To understand how to use chemical approaches to emulate biological system to study natural molecules and generate new functional molecules. Useful as an introduction to research in areas of chemical biology, medicinal chemistry and biotechnology.

CHEM2510 Principles and applications of spectroscopic and analytical techniques (6 credits)

To cover the principles and applications of modern practical spectroscopic and analytical techniques. This course is a pre-requisite for the advanced chemistry courses.

CHEM3105 Chemistry project (12 credits)

To provide experience of research techniques by working on a short project under the direct supervision of a member of staff. This course would prepare students for graduate school work in chemistry.

CHEM3106 Symmetry, group theory and applications (6 credits)

To introduce the concepts of symmetry and group theory and to apply them in solving chemical problems. This course also provides an introductory treatment of bonding theories, inorganic electronic and vibrational spectroscopy. This course is essential for students who wish to take advanced courses in inorganic chemistry and all types of spectroscopy.

CHEM3107 Interfacial science and technology (6 credits)

To understand the science and technology of interfacial phenomena and processes often appeared in high value added products and modern technologies.

CHEM3110 Advanced materials (6 credits)

This course is a continuation from Introduction to Materials Chemistry. It provides a more comprehensive overview on materials chemistry and application of materials in advanced technology. The most recent development in materials chemistry will also be discussed.

CHEM3203 Analytical chemistry (9 credits)

To cover the principles and methodologies of Analytical Chemistry and its use in the analysis of gas, liquid and solid samples.

CHEM3204 Modern chemical instrumentation and applications (6 credits)

The aim of the course is to provide an understanding of modern instrumentation, covering both fundamental principles and practical aspects of instrument design. The course will be of particular benefit to those pursuing a higher research degree or a career in technical sales/service.

CHEM3303 Advanced inorganic chemistry (9 credits)

To give further, more detailed, treatment to topics mentioned in Intermediate Inorganic Chemistry and to develop new areas of interest. The course also aims to prepare students for graduate work in inorganic chemistry.

CHEM3304 Organometallic chemistry (6 credits)

To give further, more detailed, treatment to organometallic chemistry mentioned in Intermediate Inorganic Chemistry. The course also aims to introduce and familiarize students with advanced laboratory techniques, and to prepare students for graduate work in inorganic and organometallic chemistry.

CHEM3403 Integrated organic synthesis (9 credits)

This course aims to cover aspects of modern synthetic methods, develops the concept of synthetic planning with relevance and in the context of drug synthesis, medicinal chemistry, and natural product chemistry, so as to provide an integrated approach to the subject.

CHEM3404 Advanced organic chemistry (6 credits)

To provide students with knowledge in organic chemistry reaction mechanisms and organic compound structure determination.

CHEM3405 Organic chemistry of life (6 credits)

The major objective of this course is to give the students an understanding and appreciation of the role of organic chemistry in biology and biochemistry.

CHEM3407 Medicinal chemistry (6 credits)

This course covers the chemical principles of drug design and drug action and uses as an introduction to research in areas of bioorganic chemistry, bioinorganic chemistry, medicinal chemistry, pharmaceutical chemistry, and biotechnology.

CHEM3506 Computational chemistry (6 credits)

This course covers topics in computational chemistry including first-principles methods and molecular dynamics methods. It is offered to undergraduate and postgraduate students interested in computational chemistry, computational physics and computational biology.

CHEM3513 Advanced physical chemistry (6 credits)

This course covers advanced topics in physical chemistry. It is offered for students majoring in physical chemistry and for students who are interested in postgraduate studies.

CHEM3988 Chemistry internship (6 credits)

This course aims to offer students the opportunities to gain work experience in the industry related to their major of study. The workplace learning experience would be of great benefits to the students to apply their knowledge gained in the study to the real work environments. Students have to take on at least 160 hours of internship work either within the University or outside the University arranged by the School/Departments.

ENVS2008 Pollution (6 credits)

To introduce students to the principles of chemical and biological processes of pollution development and the impacts of pollution on environmental health. The course provides the basics for advanced courses on environmental toxicology, environmental monitoring and testing, environmental impact assessment, biodiversity, waste treatment and technologies, and environmental remediation.

Department of Earth Sciences

EASC0003 Natural hazards and geological risk (6 credits)

Natural hazards such as volcanoes, earthquakes, tsunamis, typhoons, floods, droughts, wildfires and landslides pose potential threats to an increasing number of humans. Climate change strongly influences the dynamics in hazard prone areas. This course aims to develop an awareness and understanding of the scale of these and other geological risks and their driving forces in order to develop suitable risk mitigation strategies.

EASC0009 Peaceful use of nuclear technologies (6 credits)

To provide students with the science backgrounds and knowledge on application of nuclear technologies in daily life and to invoke an awareness of current applications of nuclear sciences by case studies.

EASC0105 Earth through time (6 credits)

To introduce the concept of geological time and basic geological principles. To provide an understanding of the fossil record and the integration of Earth Systems and plate tectonics. To gain an appreciation of our place in the Universe, an understanding of the evolution of Earth and life on Earth through time.

EASC0116 Introduction to physical geology (6 credits)

The course, intended for students taking their first course in earth science, provides a basic overview of the earth's structure, material and internal and external processes.

EASC0117 Geological heritage of Hong Kong (3 credits)

To give an overview of the geology of Hong Kong, potential geological resources for tourism and the role of geology in the development of Hong Kong's infrastructure.

EASC0118 Blue planet (6 credits)

The aim is to provide those students who are taking a first course in Earth Sciences with a fundamental knowledge of how our diverse and living planet Earth works with weaving together an understanding of the dynamic and interactive processes in the Earth's lithosphere, hydrosphere, biosphere and atmosphere. In addition, students should become familiar with the way the study of Earth Sciences blends observation, information, hypothesis, communication and decision making for a better understanding of the future of our planet.

EASC0122 Introduction to climate science (6 credits)

This course provides an introduction to the study of global climate systems and climate change. We study the controls of temporal and spatial variations in earth's climate and its histories of past climates preserved in the geological record. We look at modern research methods that are used in paleoclimatic and paleoenvironmental reconstructions.

EASC0135 Introduction to atmosphere and oceans (3 credits)

An understanding of the interaction between the ocean and atmosphere is fundamental to even the basic understanding of how weather systems work. This course will explain the interaction of the ocean and atmospheric system.

EASC1123 Planetary geology (6 credits)

This course provides students with an introduction to the origin, evolution, structure, composition and distribution of matter in the Solar System condensed in the form of planets, satellites, comets, asteroids and rings, with particular emphasis on surface features, internal structures and histories from a geological point of view. The course incorporates the findings from recent space investigations, planetary imagery, remote sensing and Earth analogues to extraterrestrial features into a fascinating portrayal of the geological activities and histories in our Solar System.

EASC2004 Geophysics (6 credits)

An overview of the geophysical characteristics and processes of the solid earth, the atmosphere and the oceans, as well as the methodologies for studying geophysical data.

EASC2005 Meteorology (6 credits)

The course is a survey of the Earth's atmospheric structure and behavior, instrument of observation, weather elements and weather systems.

EASC2108 Structural geology (6 credits)

The course covers the mechanical properties of rocks and how they are deformed, geological maps and their use in interpreting structure.

EASC2109 Igneous and metamorphic petrology (6 credits)

To provide a comprehensive coverage of the principles and techniques used in the study of igneous and metamorphic rocks and rock-forming processes.

EASC2112 Earth systems (6 credits)

To provide students who have a fundamental background of Earth Sciences with a more in depth appreciation of the Earth System and the interplay between its component parts, in order that they might appreciate some of global issues facing earth scientists, changes in the natural environment, and how informed decisions can be made on the future exploitation and preservation of the planet.

EASC2113 Sedimentology (6 credits)

The course deals with sedimentary rocks and processes, and the depositional environments in which sediments accumulate.

EASC2124 Geological maps and air photographs (6 credits)

This course is a hands-on field and class-based course that introduces basic geological field and mapping techniques and the use of geological equipment and air photographs as well as presenting an overview of the geology of Hong Kong.

EASC2125 Global tectonics (6 credits)

To provide students with an understanding of the driving forces of Earth processes and the global outcome of these processes through an examination of direct and indirect observations, the evolution of hypotheses, and critical thinking.

EASC2126 Mineralogy and geochemistry (6 credits)

To provide the fundamentals and principles of geochemistry and mineralogy. It gives the basis for understanding the petrography of igneous, sedimentary and metamorphic rocks. To introduce geochemical principles, including trace elements and isotopes.

EASC2127 Global change: anthropogenic impact (6 credits)

This course will explore the role of humans in global change and the environmental responses to such changes. Causes and impacts of climate change will be discussed.

EASC2128 Earth-ocean-atmosphere interactions (6 credits)

To examine the complex interactions between geosphere, hydrosphere and atmosphere primarily through chemical exchange and physical changes at the interfaces.

EASC2129 Physical oceanography (6 credits)

To provide a solid foundation of knowledge about the physical processes dictating the oceans movements - by looking at the structure of the atmosphere, the thermodynamic principals and properties governing sea water to formulate how these areas influence circulation. The chemical composition of sea water as an ocean tracer to will be used to reinforce what we have learned about ocean circulation. Finally, by combining our knowledge of ocean circulation and chemical content, we will examine primarily through laboratory exercises where primary producers thrive in ocean waters.

EASC2131 A cool world: ice ages and climate change (6 credits)

This course set out to provide students with an understanding of how dynamics Earth is and how it has changed over the past 2.5 million years.

EASC2201 Hydrogeology (6 credits)

To study the role of ground water in subsurface geological process and its environmental and geotechnical importance.

EASC2301 Field camps (6 credits)

The aims of a geological field camp are to provide 1) essential training and experience in geological mapping techniques and 2) opportunities to study at first-hand areas of particular geological interest and importance, especially outside Hong Kong.

EASC2307 Directed studies in earth sciences (6 credits)

To enhance the student's knowledge of a particular topic and the student's self-directed learning and critical thinking skills.

EASC3132 Earth resources (6 credits)

To provide students with knowledge about the classification of mineral deposits and their basic features; to understand the processes that lead to their formation; to gain hand on experience with mining procedures. In addition, students should gain knowledge about the world wide distributions of mineral and industrial resources.

EASC3133 Applied geochemistry (6 credits)

To present key concepts of geochemistry and their application to environmental and earth science problems.

EASC3134 Regional geology (6 credits)

To cover the tectonic evolution of mainland East Asia and SE Asia, with a specific focus on the geology of Hong Kong.

EASC3202 Soil and rock mechanics (6 credits)

To provide a basic knowledge of soil and rock mechanics for those wishing to consider further studies on a career in engineering geology/geotechnics.

EASC3203 Engineering geology (6 credits)

To present some of the concepts and skills of importance in the profession of Engineering Geology and illustrate their use by case histories.

EASC3302 Advanced topics in geosciences (6 credits)

To provide students with insights into understanding current issues in geosciences, and options to specialize in particular subject areas.

EASC3308 Earth sciences project (12 credits)

To enhance the student's knowledge, ability and interest in advanced studies in the Earth Sciences by providing the student with an opportunity to be engaged in an advanced research project.

EASC3988 Earth sciences internship (6 credits)

This course aims to offer students the opportunities to gain work experience in the industry related to their major of study. The workplace learning experience would be of great benefits to the students to

apply their knowledge gained in the study to the real work environments. Students have to take on at least 160 hours of internship work either within the University or outside the University arranged by the School/Departments.

ENVS0001 Introduction to environmental science (6 credits)

To provide students with an inter-disciplinary introduction to Environmental Science with key questions to highlight the interconnections between biological, geological and chemical processes.
To convey the basic science behind environmental interactions and place it within the context of human impacts and dependence on the natural world.
To better understand how humans interact, manage and sustain the environment within the context of our economies, governments and individual choices.

ENVS2004 Environment and society (6 credits)

This course introduces students the interface between human society and the earth systems, and helps students examine the relationship between them. The course emphasizes knowledge and understanding of how human society has interacted with the natural environment in the past and present, and the environmental problems that have arisen from human exploitation of the natural environment. Students will explore ways human society can deal with environmental problems and develop sustainable economies.

ENVS2007 Natural hazards and mitigation (6 credits)

This course introduces students the mechanisms of major natural hazards including earthquake, storm and flood, landslide and tsunami. The teaching emphasizes the fundamental concepts: natural hazards are not entirely natural, and understanding the frequency and processes of these hazards is essential in developing prevention, protection and mitigation measures. With case studies, the course will help students explore the political, economical and engineering means of dealing with natural hazards.

ENVS2011 Directed studies in environmental science (6 credits)

To enhance students knowledge on a particular topic in environmental science and students self-directed learning and critical thinking skills.

ENVS3988 Environmental science internship (6 credits)

To offer students the opportunities to gain work experience in applying knowledge and skills gained in the study of the major to the real work environment.

Department of Mathematics

MATH0201 Basic calculus (6 credits)

To provide students with a basic background of calculus that can be applied in various disciplines, aiming at students not having done much mathematics beyond HKCEE mathematics. It can be followed by MATH1804 (University Mathematics A). Students with good grades in this course can also consider taking MATH1805 (University Mathematics B) or MATH1211 (Multivariable Calculus) as follow up.

MATH0211 Basic applicable mathematics (6 credits)

This course aims at students not having done much mathematics beyond HKCEE mathematics, and provides them with a basic background of mathematics that is essential for concentrating in various disciplines which require moderate level mathematical tools. It can be followed by MATH1804 (University Mathematics A). Students with good grades in this course can also consider taking MATH1805 (University Mathematics B) or MATH1211 (Multivariable Calculus) as follow up.

MATH1001 Fundamental concepts of mathematics (6 credits)

To provide students with solid background on fundamental concepts of mathematics and methods of mathematical proofs. Such concepts and methods are important for subsequent studies in all higher level courses in mathematics. This course can be followed by (or taken concurrently with) MATH1111, MATH1211 and other more advanced courses.

MATH1111 Linear algebra (6 credits)

Linear algebra has wide applications to diverse areas in natural science, engineering, management, and social science. This course provides students an introduction to the theory and techniques of linear algebra. It is a foundation course for all mathematics students, to be followed by other more advanced courses in mathematics such as MATH2301, MATH2303.

MATH1211 Multivariable calculus (6 credits)

Students of this course will learn the theory of multivariable calculus in a rather rigorous manner, and learn how to apply the theory to solve practical problems. This is a required course for students taking major in Mathematics or Mathematics/Physics, and is suitable for all students who will use multivariable calculus in their area of study. Students taking minor in Mathematics may take this course as one of the required courses. This course is a pre-requisite of many mathematics courses of more advanced level.

MATH1611 Mathematical laboratory and modeling (6 credits)

This course introduces a powerful and free computer software Scilab for scientific research. The programming language will be taught via a number of mathematical models in Physics, Chemistry, Biology, Ecology, Statistics and Management. Some basic and important techniques in Calculus and Linear Algebra will also be covered.

MATH1804 University mathematics A (6 credits)

To provide students with a more solid background of calculus of one variable and an introduction to calculus of several variables and matrices that can be applied in various disciplines, aiming at students having taken an elementary calculus course. It can be followed by MATH1211 (Multivariable Calculus).

MATH1805 University mathematics B (6 credits)

To provide students with a solid background of calculus of several variables and matrix algebra and an introduction to ordinary differential equations that can be applied in various disciplines. This course can be followed by other more advanced courses in mathematics.

MATH1813 Mathematical methods for actuarial science (6 credits)

To provide students with a background of calculus of several variables and matrix algebra and an introduction to ordinary differential equations that can be applied in actuarial science.

MATH2001 Development of mathematical ideas (6 credits)

- To acquaint the students with the origin and growth of basic mathematical concepts.
- To assist the students to gain a deeper insight and broader view of mathematics as a discipline and human endeavour.
- To provide the students with an opportunity to write on and talk about mathematics, and to engage in independent study.

MATH2002 Mathematics seminar (6 credits)

This is a seminar style course intended for those who have very strong interests and good ability in mathematics. Students will be given book chapters and elementary research articles for private study and then make presentations in front of the whole class. Individual meetings with the instructors will be arranged prior to their presentations. Active participation in all the discussions is expected. The aim of the course is to let students learn how to initiate self/independent study in mathematics.

MATH2201 Introduction to mathematical analysis (6 credits)

To introduce students to the basic ideas and techniques of mathematical analysis.

MATH2301 Algebra I (6 credits)

This course aims to present those fundamental topics and techniques of algebra that are finding wide applications in mathematics and the applied sciences. It is complete in itself, and may also be followed by Algebra II and Topics in Applied Discrete Mathematics.

MATH2303 Matrix theory and its applications (6 credits)

Matrix theory has a close connection with other mathematical subjects such as linear algebra, functional analysis, and combinatorics. It also plays an important role in the development of many subjects in science, engineering, and social sciences. In this course, students will be taught the fundamentals of matrix analysis and its application to various kinds of practical problems. Mathematical software may be used in the course, so that students can learn how to use the computer to solve matrix problems.

MATH2304 Introduction to number theory (6 credits)

To provide students with basic concepts about numbers, their properties and the arithmetic of congruences. The prime numbers are the basic building blocks of all the natural numbers under multiplication. The interplay between the multiplicative and additive properties of prime numbers is particularly interesting. The course will study further properties and the distribution of the prime numbers, and some of the longstanding open problems concerning them. Important applications of number theory to modern cryptography will also be introduced.

MATH2401 Analysis I (6 credits)

This course extends to more general situations some basic results covered in Calculus and introduces some fundamental concepts which are essential for advanced studies in mathematical analysis.

MATH2402 Analysis II (6 credits)

This course gives a comprehensive and rigorous treatment on calculus of several variables, and a modern treatment of integration theory in the language of differential forms which is essential for more advanced studies in analysis and geometry.

MATH2403 Functions of a complex variable (6 credits)

This course is indispensable for studies in higher mathematical analysis and the more theoretical aspects of physics. In this course, the students are introduced to the fundamental concepts and properties of analytic functions and are shown how to look at analyticity from different points of view. At the same time, the techniques of solving problems without losing sight of the geometric picture are emphasized.

MATH2405 Differential equations (6 credits)

The standard topics in the wide field of ordinary differential equations (ODE) included in this course are of importance to students of mathematics and sciences. Our emphasis is on principles rather than routine calculations and our approach is a compromise between diversity and depth.

MATH2408 Computational methods and differential equations with applications (6 credits)

This course covers topics in the fields of differential equations and numerical analysis which are of importance to sciences students. The emphasis is practical applications of basic principles.

MATH2600 Discrete mathematics (6 credits)

To introduce students to the basic ideas and techniques of discrete mathematics.

MATH2601 Numerical analysis (6 credits)

This course covers both the theoretical and practical aspects of numerical analysis. Emphasis will be on basic principles and numerical methods of solution, using high speed computers.

MATH2603 Probability theory (6 credits)

The emphasis of this course will be on probability models and their applications. The primary aim is to elucidate the fundamental principles of probability theory through examples and to develop the ability of the students to apply what they have learned from this course to widely divergent concrete problems.

MATH2901 Operations research I (6 credits)

The objective is to provide a fundamental account of the basic results and techniques of linear programming (LP) and its related topics in operations research. There is an equal emphasis on all three aspects of understanding, algorithms and applications. The course serves, together with a course on network models, as essential concept and background for more advanced studies in operations research.

MATH2904 Introduction to optimization (6 credits)

This course introduces students to the theory and techniques of optimization, aiming at preparing them for further studies in operations research, mathematical economics and related subject areas.

MATH2905 Queueing theory and simulation (6 credits)

This course introduces students to the models and theory of queueing system, as well as the technique of simulation as a practical tool of analysis.

MATH2906 Financial calculus (6 credits)

This course gives an elementary treatment for the modeling of financial derivatives, asset pricing and market risks from an applied mathematician's point of view. Stochastic calculus and solution methods will be introduced.

MATH2911 Game theory and strategy (6 credits)

Game theory is the logical analysis of situations of conflict and cooperation. This course will introduce the students to the basic ideas and techniques of mathematical game theory in an interdisciplinary context.

MATH2999 Directed studies in mathematics (6 credits)

This course is designed for a student who would like to take an early experience on independent study. It provides the student with the opportunity to do independently a small mathematics project close to research in nature.

MATH3302 Algebra II (6 credits)

This course is an extension of Algebra I and goes deeper into the various topics treated in that course. Together, the two courses are complete in themselves, and may be followed by Topics in Algebra and Topics in Applied Discrete Mathematics.

MATH3404 Functional analysis (6 credits)

This course introduces students to the basic knowledge of linear functional analysis, an important branch of modern analysis.

MATH3406 Introduction to partial differential equations (6 credits)

This course introduces students to the basic techniques for solving partial differential equations as well as the underlying theories.

MATH3501 Geometry (6 credits)

As geometric forms often appear in nature, the study of geometry helps us to understand better the universe in which we live. Moreover, geometry has much intrinsic beauty and the study of it is an excellent training in intuitive thinking. In this course we study the differential geometry of curves and surfaces in 3-space. In the study of regular surfaces in 3-space we exhibit geometric notions that are definable in terms of metrical properties of these surfaces alone, leading to the intrinsic geometry of surfaces.

MATH3511 Introduction to differentiable manifolds (6 credits)

The course aims at introducing students to the notion of differentiable manifolds and basic concepts and tools for their study, such as differential forms, exterior differentiation and integration; vector fields, distributions, and integrability; and covariant differentiation through affine connections. The course also aims at presenting concrete examples that are relevant to further fields of study. Especially, it introduces Lie groups through the use of matrix groups.

MATH3903 Network models in operations research (6 credits)

The objective is to provide a fundamental account of the basic results and techniques of network models in operations research. There is an equal emphasis on all three aspects of understanding, algorithms and applications. The course serves, together with a course on linear programming, to provide essential concept and background for more advanced studies in operations research.

MATH3988 Mathematics internship (6 credits)

This course aims to offer students the opportunities to gain work experience in the industry related to their major of study. The workplace learning experience would be of great benefits to the students to apply their knowledge gained in the study to the real work environments. Students have to take on at least 160 hours of internship work either within the University or outside the University arranged by the department.

MATH3999 Mathematics project (12 credits)

The aim of the course is to provide students with opportunity to formulate and investigate, in depth, problems of practical interest and/or have a foretaste of mathematical research. The work, to be done on an individual basis, is considered a highly desirable part of the training of a mathematician.

MATH6504 Geometric topology (6 credits)

This course gives a geometric introduction to some of the methods of algebraic topology. The emphasis throughout will be on the geometric motivations and applications of the theory.

Department of Physics

PHYS0001 Nature of the universe I: introduction to observational astronomy and the solar system (3 credits)

This general education course is designed as an elective for students in all disciplines and all years. No prior knowledge in astronomy, physics, and higher mathematics is required.

PHYS0002 Nature of the universe II: stars, galaxies and cosmology for beginners (3 credits)

This general education course is designed as an elective for students in all disciplines and all years. It focuses on the theoretical aspect of astronomy. No prior knowledge in astronomy, physics, and higher mathematics is required. But some prior knowledge in science and mathematics would be an advantage.

PHYS0607 Revealing the Magic in Everyday Life (3 credits)

This course is designed for students in all disciplines and all years who are curious about science in daily life. No prior knowledge in advanced physics is required. The course covers the working principles and mechanisms of the things and phenomena around us. Logical thinking and appreciation of science are emphasized with mathematics kept at a minimum. Students are trained to develop scientific intuition and to appreciate that many things in everyday life are not purely magical but can also be predictable.

PHYS0608 Kitchen science: kitchen mysteries revealed (3 credits)

The course aims to develop students' critical thinking skills and broaden their basic science knowledge by exploring the science behind the common daily life activity of cooking.

PHYS0625 Physics by inquiry (6 credits)

This course aims at providing students a solid background and knowledge in physics as well as its connection with our daily life phenomena and activities.

PHYS0628 Renewable energy (3 credits)

The course aims to provide students with principles of operation of different energy sources, such as solar, biomass, wind, geothermal, hydroelectric, and tidal energy, as well as fuel cells. By discussing different renewable energy sources, their advantages and disadvantages, factors affecting their wide implementation and their impact on environment, the course aims to foster interest in science and critical thinking, as well as improved understanding and informed decision making concerning the energy crisis and sustainable development.

PHYS0629 Weather and climate (6 credits)

Weather and climate play an important role in human activities and history. In this course, we shall introduce to students the fundamentals of weather, climate and climate changes, to arouse their interests in the scientific and technological advancements.

PHYS1303 Special relativity I (3 credits)

This course is designed as an elective for students in all disciplines and all years with science background.

PHYS1315 Methods in physics I (6 credits)

This course provides students with experience in using mathematical tools and techniques to solve problems in physics. It is complete in itself, or may also be followed by Methods in Physics II.

PHYS1316 Methods in physics II (6 credits)

This course provides students with experience in using mathematical tools and techniques to solve problems in physics. It is complete in itself, or may also be taken after Methods in Physics I.

PHYS1414 General physics I (6 credits)

This course is the first of a two-course series designed to offer a comprehensive training of physics covering all the major building blocks of the physical laws governing nature, including mechanics, thermal physics, oscillation and waves, optics, and electricity and magnetism. A calculus-based approach is adopted.

PHYS1415 General physics II (6 credits)

This course is the second of a two-course series designed to offer a comprehensive training of physics covering all the major building blocks of the physical laws governing nature, including mechanics, thermal physics, oscillation and waves, optics, and electricity and magnetism. A calculus-based approach is adopted.

PHYS1417 Basic physics (6 credits)

This course covers the essential topics in physics in one semester, with the emphases placed on conceptual ideas rather than rigorous mathematical treatments. It serves as a first course to students who are interested in physics or those who are planning to take physics as a minor.

PHYS2021 The physical universe (6 credits)

To appreciate the underlying physical principles of astronomy. This course is designed as an elective for second or third year students with some basic science knowledge.

PHYS2022 Observational astronomy (6 credits)

This course aims to introduce to the students the tools of contemporary observational astronomy. We will discuss the physics of light detection at radio, infrared, visible, X-ray, and gamma-ray wavelengths, and the instruments and techniques used for observations of celestial objects over the full range of electromagnetic radiation. The emphasis is on a hands-on approach for students to gain experience in doing astronomical observations and data reduction.

PHYS2039 Principles of astronomy (6 credits)

To introduce and place in the context of contemporary astrophysics a number of basic physical principles widely used in astronomy.

PHYS2221 Introductory solid state physics (6 credits)

To provides a broad introduction to modern theories of the behaviour and properties of the solid state of matter. It is designed as a self-contained course which at the same time will serve as a basis for more advanced courses and projects in solid state physics.

PHYS2222 Waves and optics (6 credits)

To give a coherent introduction to the development of modern physical optics, with particular attention to the wave properties of light and optic application.

PHYS2227 Laser and spectroscopy (6 credits)

The course aims at providing a broad introduction to major types of lasers and modern laser spectroscopy.

PHYS2235 Physics of nanomaterials (6 credits)

This course is designed to let senior undergraduate students and fresh postgraduate students know fundamental concepts and physical properties of nanomaterials including two-dimensional quantum wells, one-dimensional quantum wires and zero-dimensional quantum dots.

PHYS2236 Device physics (6 credits)

This course aims at providing introduction to semiconductor electronic and optoelectronic devices.

PHYS2321 Introductory electromagnetism (6 credits)

To provide those students who major in Physics with a preliminary knowledge of electrostatic and magnetism physical concepts required for an understanding of electricity and magnetism.

PHYS2322 Statistical mechanics and thermodynamics (6 credits)

An introduction to Statistical Mechanics and elementary Thermodynamics with reference to related phenomena in Physics. This course is taught as a basic and essential subject for students majoring in Physics.

PHYS2323 Introduction to quantum mechanics (6 credits)

This course aims at a rigorous introduction to the concepts and methods of non-relativistic quantum mechanics. It is a prerequisite for several advanced physics courses.

PHYS2325 Theoretical physics (6 credits)

The aim of this course is to provide students with the conceptual skills and key analytical tools for solving real problems in all major areas of physics.

PHYS2533 Directed studies in physics (6 credits)

This course is designed for highly selective second year students who are interested in tackling a research project in physics. It provides students with the opportunity to study a physics problem by themselves, either theoretical or experimental, under the supervision by an academic staff. The available projects are close to research in nature and are designed for prospective research students.

PHYS2626 Introductory classical mechanics (6 credits)

This course aims at providing students a solid foundation in classical Newtonian mechanics with rigorous mathematical treatments. Students are expected to have good working knowledge of calculus and vectors.

PHYS2627 Introductory quantum physics (6 credits)

This course is designed to provide students with a comprehensive introduction to the concepts and ideas related to study of physics in the microscopic scale-which revolutionize our understanding of the properties of light and matter in the universe.

PHYS3034 Cosmology (6 credits)

The aim of the course is to offer an advanced introduction to cosmology, to familiarize students with the mathematical formulation used to model the evolution and dynamics of the universe, and to provide an up to date discussion of the big bang theory and structure and galaxy formation.

PHYS3036 Interstellar medium (6 credits)

An overview of the physical nature and origin of material between stars in galaxies, and an introduction to material between galaxies and in the Cosmic Web.

PHYS3037 Selected topics in astrophysics (6 credits)

To introduce students some current topics in astrophysics. It may be taken as a self-contained course or as background to research work in astrophysics.

PHYS3038 Planetary science (6 credits)

This course provides students with a modern understanding of the properties of our Solar System and planetary systems around other stars and of the physical, chemical, and geological processes that govern them.

PHYS3040 Stellar physics (6 credits)

This course introduces the basic theory of stellar structure and evolution. It follows a vigorous mathematical treatment that stresses on the underlying physical processes. Knowledge in quantum mechanics and statistical mechanics will be advantageous.

PHYS3331 Electromagnetic field theory (6 credits)

To provide those students who major in Physics with a fundamental knowledge of electrostatic and magnetism comprehensive concepts of electrodynamics and required training for physics related research.

PHYS3332 Quantum mechanics (6 credits)

Introduces more advanced concepts of quantum mechanics. Together with PHYS2323, these will provide the basic knowledge of quantum mechanics to an undergraduate student.

PHYS3336 Classical mechanics (6 credits)

The aim of this course is to introduce general methods of studying the dynamics of particle systems, through which students can acquire experience in using mathematical techniques for solving practical problems.

PHYS3531 Physics project (12 credits)

This course is designed for final year students who are interested in tackling a research project in physics. It provides students with the opportunity to comprehensively study a particular physics problem by themselves, either theoretical or experimental, under the supervision by an academic staff. The available projects are close to research in nature and are designed for prospective research students.

PHYS3987 Quantitative tools in physics (0 credits)

This course aims to enable students to use a few quantitative software packages that are commonly used in physics computation, experiment and presentation through mainly hands on projects. It is designed for students who want to have a better preparation for a physics and astronomy research career, in particular, those works that involve heavy computational and/or experimental elements. Successful completion of this pass/fail course can be regarded as having fulfilled the experiential learning requirements for astronomy, mathematics/physics, or physics majors.

PHYS3988 Physics internship (6 credits)

This course aims to offer students the opportunities to gain work experience in the field of physics that are related to the major(s) of study.

PHYS6501 Computer controlled measurements in physics (6 credits)

The aim of this course is to provide students with practical skills for designing and operating computer controlled measurement systems. In addition to measurement software development skills, the students will learn principles of operation of commonly used components in measurement systems for experimental condensed matter research.

PHYS6502 Advanced statistical mechanics (6 credits)

This course intends to introduce some advanced topics in the field of equilibrium statistical physics.

PHYS6504 Advanced quantum mechanics (6 credits)

This course introduces postgraduates and senior undergraduates to theory and advanced techniques in quantum mechanics, and their applications to select topics in condensed matter physics.

ENVS2006 Environmental radiation (6 credits)

In this course, students will learn about various kinds of radiations in the environment, the experimental techniques to detect them, the methods to trace them and to assess their hazard to the environment, and the ways to reduce the hazard in events of nuclear accidents or incidents.

Department of Statistics and Actuarial Science

STAT0301 Elementary statistical methods (6 credits)

Research findings are usually supported by data. Data collected in an experiment/survey are often concerned with situations involving variability and uncertainty. They are used to estimate the true value of a certain quantity or to test the acceptability of a certain new hypothesis. Valid methods of analyzing the data are thus essential to any successful investigation. The course aims to present the fundamentals of statistical methods widely used by researchers. Microsoft Excel might be used to carry out some statistical analysis. There is no demand of sophisticated technical mathematics.

STAT0302 Business statistics (6 credits)

The discipline of statistics is concerned with situations involving uncertainty and variability. Variability greatly affects the interpretation of data. Thus statistics forms an important descriptive and analytical tool. This elementary course, which is taught without much technical mathematics, presents many standard situations of data analysis and interpretation with emphases on business examples. The statistical tests of these situations are presented. Microsoft Excel might be used to carry out some statistical analysis.

STAT1301 Probability and statistics I (6 credits)

The discipline of statistics is concerned with situations in which uncertainty and variability play an essential role and forms an important descriptive and analytical tool in many practical problems. Against a background of motivating problems this course develops relevant probability models for the description of such uncertainty and variability.

STAT1302 Probability and statistics II (6 credits)

This course builds on STAT1301, introducing further the concepts and methods of statistics. Emphasis is on the two major areas of statistical analysis: estimation and hypothesis testing. Through the disciplines of statistical modelling, inference and decision making, students will be equipped with both quantitative skills and qualitative perceptions essential for making rigorous statistical analysis of real-life data.

STAT1303 Data management (6 credits)

This course is designed for students who want to learn a statistical software (SAS) for data management and elementary data analysis. This course focuses on using SAS to manage data set input and output, work with different data types, manipulate and transform data, perform random sampling and descriptive data analysis, and create summary reports.

STAT1304 Design and analysis of sample surveys (6 credits)

The use of sample surveys as a means to collect raw data for the compilation of statistics has become popular both in the public and private sectors. The conduct of sample surveys involves a range of activities, including overall survey design, design of sampling schemes and questionnaires, planning of fieldwork, logistical matters, scheduling, and implementation of surveys. The course provides a general overview of the process of design, implementation and analysis of results of sample surveys and due details on various aspects.

STAT1306 Introductory statistics (6 credits)

The discipline of statistics is concerned with situations involving uncertainty and variability. The interpretation of data needs special techniques when variability plays a role, as it usually does. Thus statistics forms an important descriptive and analytical tool of many scientific disciplines. Candidates with a mathematical background will find this course suitable, because the language of mathematics allows the subject of statistics to be presented with economy and clarity.

STAT1323 Introduction to demographic and socio-economic statistics (6 credits)

The course is intended as an introduction to the basic methods and data on demographic and socio-economic statistics, which provide quantitative information on population size and all major areas of citizens' lives. Intended learning outcomes are the acquisition of 1) basic knowledge including the underlying principles of the pertinent methods and statistical indicators 2) skills in the statistical descriptions of a territory and their interpretation and application to planning, policy-making and commercial endeavours.

STAT1801 Probability and statistics: foundations of actuarial science (6 credits)

The purpose of this course is to develop knowledge of the fundamental tools in probability and statistics for quantitatively assessing risk. Applications of these tools to actuarial science problems will be emphasized. Students will have a thorough command of probability topics and the supporting calculations.

STAT1802 Financial mathematics (6 credits)

This course introduces the fundamental concepts of financial mathematics which plays an important role in the development of basic actuarial techniques. Practical applications of these concepts are also covered.

STAT2301 Linear statistical analysis (6 credits)

The analysis of variability is mainly concerned with locating the sources of the variability. Many statistical techniques investigate these sources through the use of 'linear' models. This course presents the theory and practice of these models.

STAT2302 Statistical inference (6 credits)

This course covers the advanced theory of point estimation, interval estimation and hypothesis testing. Using a mathematically-oriented approach, the course provides a solid and rigorous treatment of inferential problems, statistical methodologies and the underlying concepts and theory. It is suitable in particular for students intending to further their studies or to develop a career in statistical research.

STAT2303 Probability modeling (6 credits)

This is an introductory course in probability modelling. A range of important topics in stochastic processes will be discussed.

STAT2304 Design and analysis of experiments (6 credits)

Scientific research often requires proper design and analysis of experiments. This course aims to introduce the basic principles of experimental design; to explain the concepts and to develop the statistical skills in model-based analysis of experiment.

STAT2305 Quality control and management (6 credits)

The successful control of quality in production is a matter of primary importance to a company's prosperity. This course provides an overview of quality compromise which involves both the producer and the consumer. It presents a variety of statistical solutions including control charts, acceptance and sequential sampling plans, reliability, and life-testing. Contemporary quality management systems such as total quality control, zero defects, six-sigma, and ISO-9000 will be introduced. The student is brought to the frontier of today's quality control and management ideas.

STAT2306 Business logistics (6 credits)

Modern business corporations are increasingly using logistics as a management tool, for example, in capital budgeting problems, production planning, scheduling, transportations and deciding a location for a new factory. This course addresses the business applications of logistics.

STAT2307 Statistics in clinical medicine and bio-medical research (6 credits)

In clinical research, medical data are often observed which motivates the application of statistical methodology to the clinical observational and decision-making process. Also, statistical problems often arise from clinical trial designs. It involves phase I, II, III and IV clinical trial designs, both Bayesian and frequentist approaches, sample size and power calculation. No knowledge in biology or medicine is assumed; the course provides the necessary biomedical background when the statistical problems are introduced.

STAT2308 Statistical genetics (6 credits)

This course aims to provide students with a fundamental knowledge of DNA profiling in human identification and genetic epidemiology in gene mapping and to understand how statistical theory and methods are applied to solve forensic DNA and genetic problems.

STAT2309 The statistics of investment risk (6 credits)

Most investments involve some risk. The decision to invest or not is usually made against a background of uncertainty. Whilst prediction of the future is difficult, there are statistical modelling techniques which provide a rational framework for investment decisions, particularly those relating to stock markets and the markets for interest rates, commodities and currencies. Building upon research, both in Hong Kong and abroad, this course presents the prevailing statistical theories for investment decisions in these vital markets.

STAT2310 Risk management and insurance (6 credits)

To provide knowledge on basic risk and its management, as well as basic financial planning though insurance products, to students. To allow students to understand the statistical, financial and legal principles underlying the techniques for managing the insurable risks faced by organizations and individuals. Aiming at students who have minimal background in quantitative methods, it involves very minimal quantitative calculations and is not available to students majoring in Actuarial Science.

STAT2311 Computer-aided data analysis (6 credits)

A wide range of statistical analyses and methods are presented using data sets from social sciences research and scientific studies. Measuring uncertainty, describing patterns of variability and the inter-relationship between several variables are essential aspects of scientific investigations that require good understanding of statistics. This computer-oriented but non-mathematical course develops the important concepts and methods of statistics. The course makes extensive use of computers through the user friendly statistical software JMP. No knowledge of a programming language is required.

STAT2312 Data mining (6 credits)

With an explosion in information technology in the past decade, vast amounts of data appear in a variety of fields such as finance, customer relations management and medicine. The challenge of understanding these data with the aim of creating new knowledge and finding new relationships among data attributes has led to the innovative usage of statistical methodologies and development of new ones. In this process, a new area called data mining is spawned. This course provides a comprehensive and practical coverage of essential data mining concepts and statistical models for data mining.

STAT2313 Marketing engineering (6 credits)

This course is designed to provide an overview and practical application of trends, technology and methodology used in the marketing survey process including problem formulation, survey design, data collection and analysis, and report writing. Special emphasis will be put on statistical techniques particularly for analyzing marketing data including market segmentation, market response models, consumer preference analysis and conjoint analysis. Students will analyze a variety of marketing case studies.

STAT2314 Business forecasting (6 credits)

In daily business operations, forecasts are routinely required on different aspects of the economy, the market and individual companies. Numerous statistical techniques have been developed in the past decades to provide forecasts for the business decision-maker. This course considers a wide range of such techniques that have proven useful to practitioners. The course will involve the use of computer software, EXCEL, in the teaching process.

STAT2315 Practical mathematics for investment (6 credits)

The main focus of this course is built on the concepts on financial mathematics. Practical applications of these concepts are also considered.

STAT2318 Directed studies in statistics (6 credits)

To enhance students' knowledge of a particular topic and students' self-directed learning and critical thinking skills.

STAT2801 Life contingencies (6 credits)

The major objectives of this course are to integrate life contingencies into a full probabilistic framework and to demonstrate the wide variety of constructs which are then possible to build from basic models at the foundation of actuarial science. The time-until-death random variable will be the basic building block by which models for life insurances, designed to reduce the financial impact of the random event of untimely death, will be developed. Techniques for calculation benefit premiums and benefit reserves of various types of life annuity and insurance will be discussed.

STAT2802 Statistical models (6 credits)

This course is on the basis of 'STAT1801 Probability and Statistics: Foundation of Actuarial Science'. It will further study the concepts and methods of statistics. The course will lay emphasis on the estimation and hypothesis testing, the two major areas of statistical inference. Through the study of this course, students will be equipped with both quantitative skills and qualitative perceptions essential for making rigorous statistical analysis of data.

STAT2803 Stochastic models (6 credits)

This is an introductory course in probability modelling. A range of important topics in stochastic processes will be discussed.

STAT2804 Linear models and forecasting (6 credits)

This course deals with applied statistical methods of linear models and investigates various forecasting procedures through time series analysis.

STAT2805 Credibility theory and loss distributions (6 credits)

Credibility is an example of a statistical estimate. The idea of credibility is very useful in premium calculation. Insurance loss varies according to the business nature, what distribution should be used to fit a particular loss is both of theoretical interest and practical importance. This course covers important actuarial and statistical methods.

STAT2807 Corporate finance for actuarial science (6 credits)

This course is designed for actuarial science students to receive VEE-Corporate Finance from Society of Actuaries. The objective of this course is to introduce students to the fundamental principles of corporate finance. The course will provide students with a systematic framework within which to evaluate investment and financing decisions for corporations.

STAT2812 Financial economics I (6 credits)

This course is a basic course on the derivative market. The course covers discrete-time models, including volatility estimation, and Black-Scholes formula and its variations. The course also includes some basic risk management ideas and methods. This course and STAT3812 will cover all the concepts, principles and techniques needed for SoA Exam MFE.

STAT2813 Internship in actuarial science (6 credits)

This course is offered to actuarial science students who take on an 6-month full time or similar internships. The objective is for a student to complete this course as a project based on his/her internship.

STAT2820 Introduction to financial derivatives (6 credits)

This course aims at providing an understanding of the fundamental concepts of financial derivatives. Emphases are on basic trading and hedging strategies, and the concept of no-arbitrage. This course also serves as an introduction to the programming language Excel VBA, which will be used to perform various derivatives calculations.

STAT3301 Time-series analysis (6 credits)

A time series consists of a set of observations on a random variable taken over time. Time series arise naturally in climatology, economics, environment studies, finance and many other disciplines. The observations in a time series are usually correlated; the course establishes a framework to discuss this. This course distinguishes different type of time series, investigates various representations for the processes and studies the relative merits of different forecasting procedures. Students will analyze real time-series data on the computer.

STAT3302 Multivariate data analysis (6 credits)

In many designed experiments or observational studies, the researchers are dealing with multivariate data, where each observation is a set of measurements taken on the same individual. These measurements are often correlated. The correlation prevents the use of univariate statistics to draw inferences. This course develops the statistical methods for analyzing multivariate data through examples in various fields of application and hands-on experience with the statistical software SAS.

STAT3303 Derivatives and risk management (6 credits)

Nowadays all risk managers must be well versed in the use and valuation of derivatives. The two basic types of derivatives are forwards (having a linear payoff) and options (having a non-linear payoff). All other derivatives can be decomposed to these underlying payoffs or alternatively they are variations on these basic ideas. This course aims at demonstrating the practical use of financial derivative in risk management. Emphases are on pricing and hedging strategies, and the concept of no-arbitrage.

STAT3304 Computer-aided statistical modeling (6 credits)

This is a computer-aided course of statistical modelling designed for students who have taken STAT2301 Linear Statistical Analysis and like to see theory illustrated by practical computation. Real data sets will be presented for modelling and analysis using statistical software SAS for gaining hands-on experience. The course aims to develop skills of model selection and hypotheses formulation so that questions of interest can be properly formulated and answered. An important element deals with model review and improvement, when one's first attempt does not adequately fit the data.

STAT3306 Selected topics in statistics (6 credits)

This course introduces some statistical concepts and methods which potential graduate students will find useful in preparing for work on a research degree in statistics. Focus is on applications of state-of-the-art statistical techniques and their underlying theory.

STAT3316 Advanced probability (6 credits)

This course provides an introduction to measure theory and probability. The course will focus on some basic concepts in theoretical probability which are essential for students to read research papers in actuarial science, probability and statistics.

STAT3317 Computational statistics (6 credits)

This course aims to give undergraduate and postgraduate students in statistics a background in modern computationally-intensive methods in statistics. It emphasizes the role of computation as a fundamental tool of discovery in data analysis, of statistical inference, and for development of statistical theory and methods.

STAT3319 Statistics project (12 credits)

Each year a few projects suitable for Statistics or Risk Management major students will be offered to provide students with practical experience in approaching a real problem, in report writing and in oral presentation.

STAT3320 Risk management and Basel II in banking and finance (6 credits)

To provide comprehensive knowledge and in-depth understanding of risk management in the banking and finance industry to students. The focus is on management with basic measurement fundamentals only forming a part of the course. Accordingly, minimal background in quantitative methods will be required and involved. However, basic financial product (e.g.: bonds, swaps, options) knowledge will be required.

STAT3321 Credit risk analysis (6 credits)

For a commercial bank, credit risk has always been the most significant. It is the risk of default on debt, swap, or other counterparty instruments. Credit risk may also result from a change in the value of an asset resulting from a change in the counterparty's creditworthiness. This course will introduce students to quantitative models for measuring and managing credit risk. It also aims to provide students with an understanding of the credit risk methodology used in the financial industry and the regulatory framework in which the credit risk models operate.

STAT3322 Market risk analysis (6 credits)

Financial risk management has experienced a revolution in the last decade thanks to the introduction of new methods for measuring risk, particularly Value-at-Risk (VaR). This course introduces modern risk management techniques covering the measurement of market risk using VaR models and financial time series models, and stress testing.

STAT3801 Advanced life contingencies (6 credits)

The objective of the course is to prepare students for the Markov Chain Models and Life insurances and annuities parts of the MLC course of the Society of Actuaries. Emphasis will be placed on applications of more advanced theories of life contingencies.

STAT3802 Advanced contingencies (6 credits)

This course serves as a continuation of STAT3801 and extends the coverage to include statistical models and actuarial techniques used in the field of life and non-life insurance. [Students are reminded that this course is a part of the requirement for the exemption from the Subject CT5 Contingencies of the Faculty and Institute of Actuaries, U.K.]

STAT3807 Fundamentals of actuarial practice (6 credits)

This course teaches students about the business environment and exposes them to practical real-world situations using the actuarial control cycle as a framework.

STAT3809 Current topics in actuarial science (6 credits)

This course aims at providing practical elements for actuarial students including daily life actuarial practice and also law element, which will benefit students in their coming future career.

STAT3810 Risk theory (6 credits)

Risk theory is one of the main topics in actuarial science. Risk theory is the applications of statistical models and stochastic processes to insurance problems such as the premium calculation, ruin probability, etc.

STAT3811 Survival analysis (6 credits)

This course is concerned with how models which predict the survival pattern of humans or other entities are established. This exercise is sometimes referred to as survival-model construction.

STAT3819 Project in statistics and actuarial science (6 credits)

Each year a few projects suitable for Actuarial Science students will be offered to provide students with practical experience in approaching a real problem, in report writing and in oral presentation.

STAT3821 Financial economics II (6 credits)

This course is an advanced course on the option pricing theory. The course covers Black-Scholes equation and stochastic calculus, and interest models. This course and STAT2812/STAT2806 will cover all the concepts, principles and techniques needed for SoA Exam MFE.

STAT3988 Statistics internship (6 credits)

This course is offered to students majoring in Statistics or Risk Management who take on a minimum of 160 hours of internship work related to his major disciplines. It provides students with first-hand experience in the applications of academic knowledge in a real-life work environment.

STAT3989 Essential IT skills for statistical and risk analysts (0 credits)

This course is offered to students majoring in Statistics or Risk Management and BSc in Actuarial Science. It aims to enhance students' IT knowledge and skills which are not covered in the current curriculum but are essential for career development of statistical and risk analysts. The course may contain a variety of activities including computer hand-on workshops on VBA programming, MS-office and SPSS, and group projects.

STAT6015 Advanced quantitative risk management and finance (6 credits)

This course covers statistical methods and models of importance to risk management and finance and links finance theory to market practice via statistical modeling and decision making. Emphases will be put on empirical analyses to address the discrepancy between finance theory and market data.

Faculty-level courses

SCNC2005 Career development for science students (0 credits)

The course is specially designed for second and third year Science students who wish to enhance their personal and career preparation skills through a variety of activities including lectures, practical workshops, small group discussion, role play and company visits, all of which aim to facilitate students in making informed career choices, provide training to enhance communication, presentation, time management skills, and enhance the students' employability.

SCNC2988 Service learning internship (0 credits)

The course aims to offer students the opportunities to learn through active participation in organized service activities and to help develop their social consciousness and commitment so as to become a responsible citizen. Though it may not be related to their major of study, it would be of great benefits to students to apply their knowledge and scientific mind acquired in their study to provide meaningful services to society. It also aims to achieve some educational aims of the University, such as leadership and advocacy for the improvement of human condition and tackling novel situations.

Language courses offered to BSc students

Centre for Applied English Studies

CAES1801 Academic English for Science Students (3 credits)

To build confidence and competence in the use of English for writing and speaking about science.

CAES2802 Advanced English for Science Students (3 credits)

This course aims to develop spontaneous speaking skills, to individualize language learning and to develop a sense of audience awareness in writing.

School of Chinese

CSCI0001 Practical Chinese language course for science students (3 credits)

This course aims to enhance students' competence in the use of written and spoken Chinese for professional communication. It introduces students to the essential techniques of writing different types of specialized documents and making professional oral presentations. Emphasis is also placed on students' general linguistic sensitivity.

CSCI0002 Putonghua course for science students (0 credits)

This course aims to enhance the Cantonese-speaking students' competence in spoken Putonghua and to familiarize them with the Hanyu Pinyin system of romanization. It also helps to lay a solid foundation for students who wish to go on to take more advanced courses in Modern Chinese.

CSCI2002 Advanced language studies in Chinese (3 credits)

The primary purpose of this course is to sharpen students' written and spoken Chinese skills largely through an investigation of a wide range of linguistic and extra-linguistic subject matters.