

**Course list for Cross-institutional Course/Subject Enrolment Scheme for Research Postgraduate Students
(2022-23, Term 1)**

Institution: The Chinese University of Hong Kong

Course Code	Course Title	Units	Keyword Syllabus or Brief Subject Description	Pre-requisites (if any)	Result Grade	Medium of Instruction	Remarks, if any
ACCT7110	Issues in Financial Accounting 財務會計研究課題	3	Current research topics in financial accounting. These include accounting information and capital market behaviour, the economic consequences of both mandatory and voluntarily public announcements made by firms, effects of agency costs and debt covenants on the behaviour of firms' reporting choices, fundamental analysis of accounting data, compensation schemes and financial reporting.	—	A-F	English	Quota for visiting students: 5
ANTH6010	Seminars in Anthropological Theory	3	The course provides an advanced review of major theoretical approaches in anthropology, from classic theories of Morgan, Tyler, Weber, and Durkheim, through the influential theories of Boas, Radcliffe-Brown, Levi-Strauss, Geertz and Douglas, to more recent theories.	—	A-F	English	Subject to teacher's approval on individual application
BASA6001	Research Methodology in Behavioural Studies I	3	This course is divided into two main parts. The first part is focused on the application of the philosophy of science to behavioral research in business. Basic concepts such as Explanation, scientific laws, and theory are introduced and discussed. The second part provides an introduction to the various stages of scientific research which include research design, measurement scale and development, sampling design, Data collection and statistical analysis. Even though mathematical proofs and statistical derivations will be reduced to a minimum, having the knowledge of basic statistics and matrix manipulations will be helpful.	—	A-F	English	—
BMEG5610	Research Methods in Biomedical Engineering	3	This course presents research methods in biomedical engineering, and primarily aims at preparing postgraduate students for basic research or employment in the clinic and biomedical industries. Students will learn relevant concepts and tools for analyzing data arising from quantitative and qualitative research in molecular, physiological, and clinical systems. This course focuses on developing students' ability to analyze research data and critique the scientific literature.	—	A-F	English	Quota for visiting students: 5
CHEM5642	Supramolecular Chemistry	2	This course provides an overview of fundamental concepts and essential applications of supramolecular chemistry. This course covers two parts. The first part focuses on the fundamental concepts, including a brief history of supramolecular chemistry, characterization of supramolecular systems, noncovalent interactions and ion binding, templated synthesis and self-assembly as well as inclusion complexes. The second part focuses on the application of supramolecular chemistry, discussing selected supramolecular systems and introducing important examples of applying supramolecular chemistry in materials sciences and biology.	Having taken at least one undergraduate organic chemistry course	A-F	English	—
CHEM5920	Computational Chemistry	2	This course is designed to train senior undergraduate and graduate students to do practical quantum chemistry calculations. An overview will be provided about the basic principles, with emphasis on the basic concepts, rather than the mathematical details. Practical problems are covered, so that a student learns how to solve chemical problems by computation. Theoretical Overview: Many electron problems, the Slater determinants, the calculation of one-centre and two-centre integrals, Hartree-Fock method, Linear combination of atomic orbitals, the variation principle. Post-Hartree-Fock treatment and Density Functional Theory. Practical consideration: choice of basis sets; typical xc-functional for DFT. Practical problems: geometry optimization, potential energy surface, optimization of transition states, calculation of harmonic frequencies, energetics.	—	A-F	English	—
CHLL6151	Special Topics in Chinese Linguistics I	3	Traditional philology and modern linguistics, with emphasis on special topics, authors or schools.	—	A-F	Putonghua & Cantonese	Quota for visiting students: 10
CHLL6461	Special Topics in Modern Chinese Literature II	3	Critical study of issues, other than genres and authors, in modern Chinese literature. Topics may focus on research methodologies, literary thoughts, literary schools, regional literature, comparative literature, etc.	—	A-F	Putonghua & Cantonese	Quota for visiting students: 10
COMM5220	Communication Theories	3	This course provides an overview of the current models and theories about human communication process. It serves as an introduction to the current literature, including the main theories and models, main findings, representative scholars and their work, and key sources of references, and to the varying forms of theories.	—	A-F	English	Quota for visiting students: 4

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COMM5310	Statistical Analysis in Communication	3	This course aims at introducing graduate students to the study of the scientific discipline of communication. The course covers analyses of data using the general linear model. Topics include simple and multiple regression, analysis of variance and covariance, tests of significance, the interpretation of model parameters and other topics like path analysis and structural equation modeling as time allows. Students are expected to conduct a complete quantitative research and analysis at the end of the course.	—	A-F	English	Quota for visiting students: 4
COMM5330	Qualitative Communication Research	3	This course is a graduate-level introduction to the qualitative methodology in communication. It will provide students with hands-on experiences with different approaches such as discourse analysis, ethnomethodology, ethnography and biographic method.	—	A-F	English	Quota for visiting students: 4
CSCI5120	Advanced Topics in Database Systems	3	This course will introduce to students advanced topics in database systems including advanced data structures, concurrency control, deadlock resolutions, recovery schemes, distributed database systems, multimedia database indexing techniques, and data mining, data on the web and network data analysis.	Pre-requisites: CSCI3170	A-F	English	—
CSCI5350	Advanced Topics in Game Theory	3	This course covers fundamental concepts in game theory. The course starts with pure strategy and mixed strategy Nash equilibrium in strategic games. It then discusses some specific types of games, including zero-sum games, Bayesian games, and introduces other types of equilibriums including correlated equilibrium and evolutionary equilibrium. Extensive games, subgame perfect equilibrium, sequential equilibrium, framing effects, behavioural strategies will then be discussed. Finally, coalitional games and the core will be discussed.	—	A-F	English	Students are expected to have taken CSCI2110 or ENGG2440 or ESTR2004, ENGG2040 or ENGG2430 or ESTR2002
CSCI5390	Advanced GPU Programming	3	The evolution of consumer graphics hardware leads to the introduction of parallel, programmable GPUs (Graphics Processing Units). The strong parallel computational power of GPUs not only supports real-time and realistic rendering, but also the cost-effective platform for scientific computing, such as physical simulation, numerical analysis, evolutionary computation, image processing, and computer vision, etc. This course introduces the evolution of shading language and GPU, the basic concept in GPU programming and the recent advanced usage of GPU in computer graphics and general-purpose computing. Topics covered include: shader programming, procedural texture and modelling, programmable graphics pipeline, modern shading language, GPGPU (general-purpose computing in GPU), limitations of GPU, and case studies of advanced usages of GPU.	Pre-requisites: CSCI2100 or ESTR2102 or CSCI2520	A-F	English	—
CSCI5630	Advanced Topics in Graph Mining	3	This course introduces advanced techniques for graph mining. Topics to be covered include, but are not limited to graph classification, graph clustering, community detection, influence maximization, dense subgraph finding, frequent subgraph mining, correlated subgraph mining, subgraph matching, subgraph motif enumeration, graph centralities, and other important and emerging topics in graph mining. The course will cover both classic and the state-of-the-art algorithms and systems for the topics to be studied.	—	A-F	English	—
DSME5001	Microeconomic Theory	3	This course is on advanced microeconomic theory. Topics include individual decision theory (consumer theory, production theory, choice under uncertainty), game theory (static and dynamic games under complete and incomplete information), and equilibrium and market failure (general equilibrium, principal-agent problems, economics of information, auctions, bargaining, and market design).	—	A-F	English	—
EASC5001	Research Frontiers in Earth & Atmospheric Sciences I	3	Recent research methods, experimental, and computational techniques applied in Earth & Atmospheric Sciences. Topics extend over a diversity of research areas in Earth & Atmospheric Sciences, with a consistent theme that many of the operative processes are intertwined and advances in elucidating them hinge on the adoption of an interdisciplinary framework.	—	A-F	English	Subject to teacher's approval on individual application
EASC5130	Geomorphology	3	This course is an important part of the core Earth System Sciences Curriculum. It introduces the main concepts in geomorphology with emphasis on understanding the coupling of environments, processes and materials that leads to landform development. Understanding the underlying geological principles of rocks, minerals, structural deformation and geological time are important background knowledge to be enhanced by the study of geomorphology. It discusses the qualitative and quantitative techniques for investigation and research in the field, laboratory, and computer modeling. The application of geomorphology for public safety, engineering problems and development of sustainable solutions will be emphasized. Examples from theory and practice of geomorphology in Hong Kong will be introduced. Practical understanding and skills will be gained from lab exercises and field trips in Hong Kong. Students are suggested to be equipped with basic knowledge of rocks and minerals, structural geology and geological time scale.	—	A-F	English	Subject to teacher's approval on individual application

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EASC5210	Land-Atmosphere Interactions and Boundary-Layer Meteorology	3	This course introduces the physical, chemical and biological processes governing the exchange of energy, momentum, water and other chemical materials between the atmosphere and land surface, including a formal introduction into boundary-layer meteorology. Topics covered include the basic equations and concepts of heat, momentum and mass conservation and transfer at the land-atmosphere interface; soil physics and hydrometeorology; temperature, humidity and wind distribution in the atmospheric boundary layer; theories and observations of turbulence; stability and boundary-layer dynamics; biometeorology and ecophysiology of land plants; canopy and ecosystem exchange; and land use change and urbanization. Applications to weather phenomena, air pollution, forestry, agriculture and ecosystem management will be emphasized throughout.	—	A-F	English	Subject to teacher's approval on individual application
EASC5270	Cloud Dynamics	3	This course presents an introduction to clouds. We begin with a descriptive cloud classification to introduce the different types of clouds in the Earth's atmosphere. This is followed by cloud microphysics, describing some of the basic microphysical processes regarding formation, growth, shrinkage, breakup and fallout of cloud and precipitation particles. This will then be linked to cloud dynamics, associated with the fluid motions of the atmosphere. Next, different structures of precipitation and radar cloud sensing shall be presented. These shall then feedback onto our beginning description of clouds on the global climatological level.	—	A-F	English	Subject to teacher's approval on individual application
EASC5602	Selected Topics in Earth and Atmospheric Sciences	2	This course is a quantitative discussion of the fundamental physical processes necessary for an understanding of plate tectonics and a variety of geological phenomena. We will closely follow Geodynamics by Turcotte & Schubert, to develop a thorough understanding of such fundamental physical laws as Hooke's law of elasticity, Fourier's law of heat conduction, and Darcy's law for fluid flow in porous media.	—	A-F	English	Subject to teacher's approval on individual application
ECON5440	International Trade	3	Please visit: https://www.econ.cuhk.edu.hk/econ/en-gb/programs/curriculum/course-offered/postg .	Graduate Microeconomics	A-F	English	—
ELEG5301	Photonic Integrated Circuits	3	The course covers the design of planar optical waveguides and introduce numerical methods such as Fourier transform beam Propagation Method, and Finite Difference Time Domain methods. We shall introduce the principles and design methodology of passive integrated optic functional elements (Multimode Interferometer, directional couplers, waveguide grating couplers, microring resonators, arrayed waveguide gratings), and the use of subwavelength gratings in engineering different optical properties. We shall also introduce pulse propagation in dispersive and nonlinear media and nonlinear optical effects in waveguides. Examples of waveguide based photonic devices covered in the course include waveguide photodetectors, laser diodes and optical modulators.	Vector calculus, semiconductor physics, Fourier transforms, Introductory electromagnetism	A-F	English	Quota for visiting students: 5
ENGE5010	Theoretical Linguistics	3	This course provides a broad introduction to general linguistics and the fundamental properties of human language shared by all language systems. It includes a survey of phonological, morphological, syntactic, and semantic structures of language, thus enabling students to investigate established theoretical premise for the linguistic description of natural languages and describe general grammatical properties of language universals in the light of the theory established. This course also equips students with some analytical tools and techniques for linguistic analysis and provides practice in using these scientific ways to discover the organizing principles underlying a language.	—	A-F	English	Subject to approval by the division head
ENGE5430	Second Language Acquisition	3	The purpose of this course is to introduce definitions, theoretical issues, and empirical research on the topic of second language acquisition (SLA). To be more specific, the aims of this course are to help students 1) gain familiarity with key concepts in SLA research, as a basis for critically understanding and developing professional practices; 2) develop an awareness of and ability to critique and design empirical research on topics related to SLA; 3) build an expert and personally relevant understanding of theoretical and empirical issues in the field, including cognitive-interactionist and frequency-based perspectives of SLA and the roles of learner factors such as age, first language, and individual difference variables; 4) understand the relationship between theory, research, and classroom applications; and 5) achieve increased awareness of how a range of relevant research and research methods can be used for the development of their own teaching practices and research agenda in the Chinese/Asian contexts.	—	A-F	English	Subject to approval by the division head
ENGE5540	Research Methods in Applied Linguistics	3	This course introduces students to major research methods in applied linguistics (e.g. qualitative, quantitative, mixed-method) and guide students through the basics of preparing their research proposals. Major topics of the course include the identification of research problems; the formulation of research questions; a critical review of relevant research literature; and the selection of appropriate research methods.	—	A-F	English	Subject to approval by the division head
ENGE5210	Advanced Studies in Literature	3	The course provides students with an opportunity to explore the foundational genres of literature – fiction, drama, and poetry – at an advanced level. Students will be expected to understand and utilize technical terms for the study of literature as well as enrich their overall awareness of the history of Western literature from ancient times to the present.	—	A-F	English	Subject to approval by the division head

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ENGE5220	Literature and Pedagogy	3	This course focuses on the art of teaching literature in the classroom, and the subject will be studied from both a theoretical and a practical perspective. Students will learn about contemporary theories of pedagogy as well as practice conducting discussions of literary texts. Particular attention will be given to the English-as-a-second-language environment of Hong Kong, and the particular challenges and opportunities this presents.	—	A-F	English	Subject to approval by the division head
ENGE5250	Children's Literature	3	This course provides an in-depth study of developments in children's literature through an examination of some essential, central texts as well as recent books for children. The uses of fantasy and the educational aspects of books for children will be discussed, along with notions of childhood and the nature of children. Through close reading, students will be able to engage in critical techniques applicable to most literature, for the best texts for children satisfy sensitive adult readers too.	—	A-F	English	Subject to approval by the division head
ENGE5270	Major Contemporary Novels	3	This course explores, at an advanced level, the nature of twentieth-century fiction. Topics to be considered include developments in the form of narration particularly in relation to modernism and postmodernism, the changing concerns of twentieth-century writers, and the relationship of the novel to other contemporary genres. Throughout, attention will be paid to ways in which the novel remains a powerful vehicle for the communication of ideas in our time.	—	A-F	English	Subject to approval by the division head
ENGE5600	Special Topics in Applied English Linguistics	3	This course provides an opportunity for students to be exposed to some current developments in certain area of applied linguistic research in English. The topics vary according to the research expertise of the staff or the visiting academics. Subject to the approval of the postgraduate linguistics coordinator, students are allowed to take the above course more than once and gain the units each time they pass the course. However, students cannot take courses with the same course code more than once in a single term.	—	A-F	English	Subject to approval by the division head
ENGE5630	Cognitive Linguistics and Its Applications in Language Teaching	3	This course provides an overview of the discipline of cognitive linguistics and its application in second language teaching. Cognitive linguists understand the language that we encounter every day as input from which we draw inferences about form-meaning relationships, typical patterns, and schemata. The course addresses core concepts in this area of study including: prototype, perspective, categorization, image schema, figure and ground, metaphor, metonymy, entrenchment, embodied cognition, gesture, construction grammar, attention and salience, and contingency learning. The course discusses how cognitive linguists design pedagogical methods and stimulate learners to explore the deeper meanings of grammatical forms.	—	A-F	English	Subject to approval by the division head
ENGE5670	Language Policy and Planning (LPP)	3	Language Policy and Planning (LPP) studies the linguistic, sociocultural, economic, educational, and socio-political dimensions of decisions about the use, role, and status of languages across spaces. As an interdisciplinary field, LPP investigates how and why institutions, communities, and individuals create, negotiate, and implement language policies. This course aims to engage students in understanding and analysing the theories, research practices, impacts, and implications of LPP across spaces such as school/university, family, workplace, and public places. The course engages students in critical analyses of how language policies shapes language learning, socialization, identities (e.g., race, ethnicity, and social class), ideologies and inequalities. The major topics to be covered in the course are: language ideology, language education policy (including English as a medium of instruction and multilingual education), family language policy (FLP), agency in language policy, and linguistic landscape. Students will read research-based texts and participate in discussions to examine language policies from diverse world contexts, including minority language contexts.	—	A-F	English	Subject to approval by the division head
ENGE5710	Critical Approaches in Literary Studies	3	The course aims at providing the students with an orientation of critical and interpretive approaches required of graduate studies in literature in a cross-cultural context. Various literary and critical paradigms from Western and Chinese traditions will be reviewed with a discussion of the basic issues in interpretation theory and criticism. The course will also focus on the implications of recent orientations in social sciences and philosophy for literary studies. Students will be required to identify their own research interests and pursue text-based case studies on problems or topics in criticism and interpretive theory that are involved in the interdisciplinary studies of literature.	—	A-F	English	Subject to approval by the division head

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ENGG5404	Micromachining and Microelectromechanical Systems	3	This course provides a broad overview of microfabrication and microelectromechanical systems. Topics include introduction to basic micromachining techniques such as photolithography; isotropic and anisotropic wet etching; dry etching; physical and chemical vapor deposition; electroplating; metrology; statistical design of experiments; MEMS release etching; stiction; and MEMS device testing. The course also reviews important microsenors, microactuators and microstructures. Topics include accelerometers; pressure sensor; optical switches; cantilever beams; thin-film stress test structures and bulk micromachining test structures. Lastly, the course introduces the fundamentals of central dogma of molecular biology; cell and tissue biology; and principles of transduction and measurements of molecules, cells and tissues.	—	A-F	English	—
ENGG5103	Techniques for Data Mining	3	Data mining provides useful tools for the analysis, understanding and extraction of useful information from huge databases. These techniques are used in business, finance, medicine and engineering. This course will introduce the techniques used in data mining. Topics will include clustering, classification, estimation, forecasting, statistical analysis and visualization tools.	—	A-F	English	—
ENGG5105	Computer and Network Security	3	This course aims to introduce important topics in computer and network security from an applied perspective. Topics include: (i) applied cryptography (e.g., cryptographic primitives, programming with OpenSSL), (ii) network security (e.g., unauthorized accesses, large-scale network attacks, firewall & intrusion detection systems), (iii) web security (e.g., HTTP session management and web attacks), and (iv) system security (e.g., buffer overflow, passwords, file system security). The course also discusses latest applied security topics depending on the current research trends.	—	A-F	English	Students are expected to have taken CSCI3150 or ESTR3102, and CSCI4430 or CENG4430 or IERG3310
ENGG5291	Fiber Optics: Principles and Technologies	3	This course is an overview of fiber communication technology. This course content covers fiber transmission impairments, introduction to nonlinear optics, second order and third order nonlinear phenomena, lightwave propagation in nonlinear media, optical signal processing in communications and specialty fibers.	—	A-F	English	Quota for visiting students: 5
ENGG5301	Information Theory	3	Introduction. Shannon's information measures. Entropy rate of a stationary process. The source coding theorem. Kraft inequality. Huffman code. Redundancy of a prefix code. The channel coding theorem. Rate-distortion theory. Universal data compression.	—	A-F	English	—
ENGG5501	Foundations of Optimization	3	In this course we will develop the basic machineries needed for formulating and analyzing various optimization problems. Topics include convex analysis, linear and conic linear programming, nonlinear programming, optimality conditions, Lagrangian duality theory, and basics of optimization algorithms. Applications from different fields, such as computational economics and finance, combinatorial optimization, and signal and image processing, will be used to complement the theoretical developments. No prior optimization background is required for this class. However, students should have a workable knowledge in multivariable calculus, basic concepts of analysis, linear algebra and matrix theory.	—	A-F	English	—
ENGG5781	Matrix Analysis and Computations	3	Matrix analysis and computations are widely used in engineering fields—such as machine learning, computer vision, systems and control, signal and image processing, optimization, communications and networks, and many more—and are considered key fundamental tools. This course covers matrix analysis and computations at an advanced or research level. It consists of several parts. The first part focuses on various matrix factorizations, such as eigendecomposition, singular value decomposition, Schur decomposition, QZ decomposition and nonnegative factorization. The second part considers important matrix operations and solutions such as matrix inversion lemmas, linear system of equations, least squares, subspace projections, Kronecker product, Hadamard product and the vectorization operator. Sensitivity and computational aspects are also studied. The third part explores presently frontier or further advanced topics, such as matrix calculus and its various applications, tensor decomposition, and compressive sensing (or managing undetermined systems of equations via sparsity). In every part, relevance to engineering is emphasized and applications are showcased.	—	A-F	English	Quota for visiting students: 5
GPAD5050	Qualitative Methods of Political Research	3	This course serves to introduce postgraduate students to the fundamental principles of scientific inquiry and major qualitative research methods. Topics to be covered include: conceptual foundation of research in social science, design and structure of political research, and methods for collecting and analyzing qualitative data.	—	A-F	English	—
GPAD5055	Quantitative Methods of Political Research	3	This course serves to help postgraduate students develop working knowledge of a number of statistical methods that are widely used in political and social studies. Topics to be covered include major principles of data collection and analysis and a variety of statistical models.	—	A-F	English	—

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GRMD5110	Statistical Applications in Geography	3	This course is an introduction to statistical methods in geographic research. The goal of this course is to provide a practical understanding of the application of statistical analysis to geographic problem solving. Emphasis is placed on the application of appropriate methods to analyse geographic data, the appropriate procedures for research design, and the interpretation of research results. Topics include: geographical data and data manipulation, spatial autocorrelation, multiple linear regression, logistic regression, principal components analysis, factor analysis, cluster analysis and discriminant analysis.	Basic Statistics	A-F	English	Quota for visiting students: 5
HIST6010	Graduate Seminar on Historiography 歷史學研習班	3	The course examines the principles and methods governing the study of history. Course contents and format are designed by the teacher.	For students in MPhil History	A-F	Putonghua/English	Quota for visiting students: 2
HIST6012YS	Selected Themes in Modern Chinese History 中國近代史專題研究	3	The course studies selected topics on modern Chinese history. Course contents and format are designed by the teacher.	For students in MPhil History	A-F	Putonghua	Quota for visiting students: 2
HIST6016KW	Selected Themes in Comparative History: Japanese-Chinese Translation for Historical Research 比較史專題研究：歷史研究之日漢翻譯	3	The course studies selected topics on comparative history. Course contents and format are designed by the teacher.	For students in MPhil History	A-F	Japanese & Putonghua	Quota for visiting students: 2
HIST7010	Graduate Seminar on Historiography 歷史學研習班	3	The course examines the principles and methods governing the study of history. Course contents and format are designed by the teacher.	For students in PhD History	A-F	Putonghua/English	Quota for visiting students: 2
HIST7012YS	Selected Themes in Modern Chinese History 中國近代史專題研究	3	The course studies selected topics on modern Chinese history. Course contents and format are designed by the teacher.	For students in PhD History	A-F	Putonghua	Quota for visiting students: 2
HIST7016KW	Selected Themes in Comparative History: Japanese-Chinese Translation for Historical Research 比較史專題研究：歷史研究之日漢翻譯	3	The course studies selected topics on comparative history. Course contents and format are designed by the teacher.	For students in PhD History	A-F	Japanese & Putonghua	Quota for visiting students: 2
IERG5020	Telecommunication Switching	3	Basic telephony; concepts of switching, transmission, multiplexing and concentration; circuit switching, time-space-time switching; virtual-circuit/label switching; crossbar/bus/shared-memory switches; Ethernet switches at edge and metro; switching characteristics of interconnection networks; parallel switching control in sorting, concentration, multicasting and distribution. Advisory note: Students are expected to have background in Signals and Systems.	—	A-F	English	—
IERG5230	Algorithms and Realization of Internet of Things Systems	3	This is a systems course that will enable students to have in-depth understanding of key information processing algorithms and their implementation for Internet of Things (IoT) systems. The topics cover 1) overview of basic signal processing algorithms such as FFT and digital filters; 2) advanced information processing algorithms such as acoustic and visual signal processing, spatial sensing, machine learning etc.; 3) their implementation on cutting-edge IoT platforms and key system issues of such as energy efficiency and real-time in the contexts of a set of key IoT applications such as smart health, environmental monitoring, smart homes/buildings, smart cities etc. Students will work on an individual or team project to build an end-to-end IoT system. The project should have a significant information processing component and include implementation on real IoT platforms such as Raspberry Pi, Arduino, wearable devices, smartphones etc, and. In addition to homework and lab assignments, students will also read and discuss latest publications in the areas of Internet of Things, Cyber-Physical Systems, mobile systems, and ubiquitous computing. Advisory: Students are expected to have basic understanding on signals and systems, signal processing or imaging processing and Internet of Things System.	—	A-F	English	—
IERG5290	Network Coding Theory	3	This course will demonstrate examples of network coding. Topics include: (1) Acyclic networks: linear network codes and desirable properties, existence and construction, static network codes. (2) Cyclic networks: convolutional network codes. Relations between network coding and classical algebraic coding theory will also be discussed.	—	A-F	English	—

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IERG6200	Advanced Topics in Computer Networks (Advanced Topics in Embedded AI)	3	<p>This is a systems course that will enable students to have in-depth understanding of key AI algorithms and their implementation for embedded and Internet of Things (IoT) systems. The topics cover 1) overview of basic signal processing algorithms such as FFT and digital filters; 2) advanced AI algorithms such as acoustic and visual signal processing, spatial sensing, machine learning etc.; 3) their implementation on cutting-edge IoT platforms and key system issues such as energy efficiency and real-time in the contexts of a set of representative IoT applications such as smart health, environmental monitoring, smart homes/buildings, smart cities etc.</p> <p>Students will work on an individual or team project to build an end-to-end system. The project should have a significant AI algorithm components and include implementation on real embedded IoT platforms. In addition to course project assignments, students will also read and discuss latest publications in the areas of embedded AI, Internet of Things, Cyber-Physical Systems, mobile systems, and ubiquitous computing.</p>	—	A-F	English	—
LING6902	Phonological Theory	3	This course aims to introduce the development of phonological theory over the past half century and to provide a critical survey of the current issues in phonological research. Topics include segmental alternation, syllable structure, tone, stress, and prosodic effect in word formation. Students will gain a solid understanding of the characteristics of different phonological frameworks over the course of the development of phonological theory, and will learn how to analyze a variety of language data within different phonological frameworks.	—	A-F	English	—
LING6905	Topics in Semantics	3	This course aims at exploring various semantic phenomena and examining the relation between meaning and structure in human languages. Emphasis will be given to current topics that are central to research in semantics. The discussion will also help students appreciate the relation between semantics and other sub-fields such as pragmatics, syntax and philosophy of language. The study of the related literature will help student develop the ability to carry out semantic analysis.	—	A-F	English	—
LING6940	Linguistics Research Seminars	1	This course aims at engage students in the Department's Linguistics Research Seminars and in-house research activities. These activities will deepen students' knowledge of various fields of specialization, and help prepare them for their future academic and professional careers.	—	A-F	English	—
LING6970	Special Topics in Linguistics	3	From time to time, a course focusing on a specific area of linguistics or applied linguistic research that is not covered in the regular linguistic programme may be offered. Students are allowed to take this course more than once (but not within the same term), and gain the units each time they pass the course. However, students cannot take the same topic twice.	—	A-F	English	—
MAEG5070	Nonlinear Control Systems	3	This course consists of two parts. The first part is analysis of nonlinear systems, which includes state space description of nonlinear control systems, phase plane analysis of second order dynamic systems, Lyapunov 's stability theory such as Lyapunov's first method, second method, Barbalat's lemma, and total stability. The second part is design of nonlinear control systems, which includes Jacobian linearization, feedback linearization, sliding mode control, and backstepping method.	—	A-F	English	—
MAEG5080	Smart Materials and Structures	3	The contents of this course include overview of smart materials technology, characteristics of smart materials such as piezoelectric materials, magnetorheological fluids, and shape memory alloys. It covers smart actuators and sensors; structural modelling and design; dynamics and control for smart structures; integrated system analysis; and applications in biomedical devices, precision machinery, transportation, and buildings.	—	A-F	English	—
MAEG5090	Topics in Robotics	3	This course aims to teach students a range of classical and state-of-the-art topics through a series of examples. The focus will be on how different fundamental topics, such as linear and non-linear control, optimization, path planning, visual servo control, robot kinematics and dynamics, and machine learning, are applied through practical applications within robotics. Different application scenarios that may be used to show different fundamental topics include: mobile manipulation, bio-inspired and humanoid robots, robotic walking, rehabilitation robotics, medical and surgical robots, cable-driven robots, and autonomous ground, water and aerial vehicles.	—	A-F	English	—
MEDP6002	Biostatistics	1	<p>This is a compulsory course on Biostatistics for MPhil or PhD students in the Faculty of Medicine, CUHK. This course will cover below topics:</p> <ul style="list-style-type: none"> - Exploration of data and probability distributions - Population, sampling and confidence Intervals - Hypothesis testing I - Hypothesis testing II 	—	A-F	English	Quota for visiting students: 10

Course list for Cross-institutional Course/Subject Enrolment Scheme for Research Postgraduate Students

(2022-23, Term 1)

Institution: The Chinese University of Hong Kong

Course Code	Course Title	Units	Keyword Syllabus or Brief Subject Description	Pre-requisites (if any)	Result Grade	Medium of Instruction	Remarks, if any
MKTG6152	Advanced Seminar in Marketing - Behavioral Studies I	3	The purpose of this course is to help graduate students build a solid foundation for understanding basic concepts in consumer behavioral studies. To achieve this objective, this course will emphasize on reading classic papers as well as knowing the current trend in the relevant topics. Topics will vary over course offerings but may include perception, memory, knowledge activation, affect and subjective reactions, branding, and experience management etc.	—	A-F	English	—
PHYS5330	Instrumentation I	3	This course provides an introduction to the working principles and operation techniques of instruments commonly used in experimental physics. Topics covered include: transducers and sensors; signal conditioning, propagation and conversion; noise, signal recovery techniques, computer interface, vacuum techniques, and integrated-circuit instrumentation. This course also includes laboratory experiments for practice and illustration of the subject matter.	—	A-F	English	Quota for visiting students: 3
PHYS5410	Advanced Quantum Mechanics	3	This course will discuss various theoretical topics of non-relativistic quantum mechanics at the graduate level. The quantum mechanics of many-body systems will also be introduced. Topics covered include: operator methods in quantum mechanics, addition of angular momenta, variational method, stationary perturbation theory, time-dependent perturbation theory, scattering theory, and introduction to the quantum theory of many-body systems.	—	A-F	English	—
PHYS5450	Introduction to Soft Matter Physics	3	The aim of this course is to provide students the basic concepts and research methods in soft matter physics. Topics covered include: Structural, thermodynamic and dynamical properties of macromolecules, gels, colloids, amphiphilic molecules, membranes and liquid crystals. Principles for some of the major experimental techniques used in soft matter research will also be discussed. Students who take this course are expected to have a good knowledge of thermodynamics and statistical mechanics.	—	A-F	English	—
PSYC6560	Learning and Development	3	This course provides a critical review of the psychological issues in learning and development. Topics covered include: training needs assessment, psychological principles to enhance training, types of trainings, coaching and mentoring, technology enhanced training, evaluation of training programmes.	Course related to psychology of learning or education	A-F	English	Quota for visiting students: 2
SEEM5330	Speech and Language Processing	3	This course introduces the underlying statistical approaches and major modelling techniques used in state-of-the-art automatic speech recognition (ASR) systems and speaker verification systems, with a particular focus on the core statistical models that are used in current speech recognition systems.	—	A-F	English	—
SEEM5580	Advanced Stochastic Models	3	The course introduces basic stochastic models. We will discuss Poisson Process, Discrete and Continuous time Markov Chains, Martingales and Brownian motions. Applications including queueing models, inventory models and financial models will also be discussed.	—	A-F	English	—
SEEM5640	Conversational Artificial Intelligence Systems	3	Conversational AI is a rapidly developing, interdisciplinary field brings together speech processing, natural language processing, pattern recognition and machine learning. Conversational AI systems integrate a variety of speech and language processing technologies to bring about potentially life-changing applications. This course introduces students to the principles, theories and technologies in conversational AI. We build on fundamentals including signal processing, linguistics, information theory and machine learning. We introduce component technologies including automatic speech recognition, natural language understanding, dialog modeling, knowledge graph search, natural language generation, as well as text-to-speech synthesis. These technologies can be integrated into a diversity of systems, e.g. the ubiquitous chatbot systems, speech/text mining/retrieval/summarization systems, language learning systems, etc.	—	A-F	English	—
STAT5005	Advanced Probability Theory	3	Measure theory concepts needed for probability. Expectation, distributions. Laws of large numbers and central limit theorems for independent random variables. Characteristic function methods. Conditional expectations, martingales and martingale convergence theorems. (For students in MPhil-PhD Statistics)	A good understanding of basic probability	A-F	English	Subject to teacher's approval on individual application Quota for visiting students: 10
STAT5010	Advanced Statistical Inference	3	This course is concerned with the fundamental theory of statistical inference. Topics include exponential families of distributions, sufficient statistics, convex loss functions, UMVU estimators, performance of the estimators, the information inequality and the principle of equivariance. Bayes estimation, minimax estimation, large-sample comparisons of estimators and asymptotic efficiency. (For students in MPhil-PhD Statistics; For students in MPhil Risk Management Science)	For students in MPhil, or PhD Statistics or permission of Instructor	A-F	English	Subject to teacher's approval on individual application Quota for visiting students: 10
STAT5050	Advanced Statistical Computing	3	This course covers the theory and application of advanced statistical computer algorithms for solving analytically intractable problems. Typical problems include root finding, numerical integration, optimization, model selection. Specific algorithms discussed may include Newton-Raphson, Monte Carlo integration, EM, importance sampling, Markov chain Monte Carlo algorithms, simulated annealing, and bootstrap.	Statistical Inference course for PhD students or permission of Instructor	A-F	English	Subject to teacher's approval on individual application Quota for visiting students: 10

**Course list for Cross-institutional Course/Subject Enrolment Scheme for Research Postgraduate Students
(2022-23, Term 1)**

Institution: The Chinese University of Hong Kong

Course Code	Course Title	Units	Keyword Syllabus or Brief Subject Description	Pre-requisites (if any)	Result Grade	Medium of Instruction	Remarks, if any
STAT5060	Advanced Modeling and Data Analysis	3	This course covers recent developments in statistical modeling and data analysis. Topics may include generalized linear models (GLM), mixed effects models, hierarchical models, mixture models, generalized additive models, hidden Markov model, Bayesian network, and other advanced statistical models. Statistical analysis for different types of data, such as discrete data, non-normal continuous data, hierarchical/heterogeneous data, longitudinal data, and incomplete data, will be discussed.	Course for PhD students or permission of Instructor	A-F	English	Subject to teacher's approval on individual application Quota for visiting students: 10
SOCI6001	Advanced Theory 3	3	Please refer to the URL http://www.soc.cuhk.edu.hk/postgraduate/mphil-phd-programme/mphilphd-course-list (effective from August 1, 2022)	—	A-F	English	—
SOCI6002	Advanced Methodology	3	Please refer to the URL http://www.soc.cuhk.edu.hk/postgraduate/mphil-phd-programme/mphilphd-course-list (effective from August 1, 2022)	—	A-F	English	—