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

(2021-22, Term 2)

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
ANTH5250	Seminars in the Anthropology of China I	3	Students in this course will read and discuss the major ethnographies and other anthropological studies on China. Readings will provide students with general knowledge of the anthropology of China, but will vary year to year depending on the teacher.	_	A-F	English	Subject to teacher's approval on individual application
ANTH6020	Seminars in Research Methods	3	This seminar will introduce you to a range of techniques for collecting and analyzing data. The course will also seek to help you prepare for your own research and field work. Being a seminar, the course will require extensive reading; classes will be discussions rather than lectures, and you are expected to ask questions and volunteer answers. Other teachers and advanced graduate students will be invited to participate in the course.	_	A-F	English	Subject to teacher's approval on individual application
BASA6002	Research Methodology in Behavioural Studies II	3	This course is the continuation of BASA6001. The course covers selected advanced topics associated with the behavioral research process. In particular, students will learn how to apply various types of research design and statistica methods, and how to interpret the results. Sample topics include among others experimental design, measurement theory, cross-cultural research, significance tests and statistical power, interaction and moderating effects, multi-level analysis, confirmatory factor analysis, and structural equation modeling. 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.	BASA6001 or with instructor's permission	A-F	English	_
CENG5270	EDA for Physical Design of Digital Systems	3	This course aims to present the fundamental concepts and algorithms applied in Design Automation (CAD) of VLSI circuits. The scope will include various areas in Physical Design of digital systems, including circuit partitioning, FPGA technology mapping, floorplanning, placement, routing, compaction and interconnect optimization.	_	A-F	English	_
CHEM5301	Colloids & Surface Chemistry	2	Colloids are of increasing importance in both industry and academics. Not only do many commercial products involve colloids, but research in modern chemistry, biology, material science, and physics often require knowledge of the colloidal domain. The aim of this course is to help students in: 1) studying the new fundamental concepts related to surface chemistry and colloidal materials; 2) learning the conventional approaches to synthesize and characterize the inorganic and polymeric colloidal particles; 3) understanding the colloidal stability and interactions between the colloidal particles at the interfaces; 4) Understand the topical applications at the forefront of colloid and interface science.	A good understanding of Physical chemistry	A-F	English	_
CHEM5680	Advanced Chemical Biology	3	This course offers postgraduate students who are interested in the research at the interface between chemistry and biology in-depth knowledge about chemical biology. The course has three modules. Module 1 covers the chemical structures, reactions, synthesis, and functions of biomolecules. The lecturer will first introduce four types of biomolecules, namely peptides and proteins, lipids, carbohydrates, and nucleic acids to chemistry students, with a focus on their molecular structures, higher-order structures and organizations, and the organic reactions to synthesize or to transform these molecules in a synthetic laboratory or inside cells. The course will also focus on the functions that the structures and reactivities of the biomolecules encode. Enzymes, a special group of proteins will also be introduced to the audience, together with cofactors and coenzymes as one example of proteins possessing catalytic power. Module 2 will include current technologies developed in chemical biology, and selected research projects in this field, including literature review and guest lectures based on the knowledge delivered in the first two parts. Module 3 will be guest lectures in chemical biology. Through this course, students will be able to apply their chemistry knowledge to complicated biological molecules, to comprehend chemical biology research, and to identify/solve chemical biology problems.	A good understanding of organic chemistry and biochemistry	A-F	English	_
CHLL6161	Special Topics in Chinese Linguistics II	3	Special emphasis on the use and analysis of paleographic materials. Topics vary according to students' research interests and focuses.	_	A-F	Putonghua	Quota for visiting students: 10
CHLL6371	Special Topics in Classical Chinese Literature I	3	Critical study of special topics in classical Chinese literature, with emphasis on particular authors, works or schools.	_	A-F	Putonghua	Quota for visiting students: 10
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: 5

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COMM5771	Topical Studies in Global Communication I Human Rights, Culture, and the Global Legal Imagination	3	The instructor will lecture and direct the study of a topic in Global Communication he or she specializies in. Students are allowed to take the above Topical Studies courses for 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	Quota for visiting students: 5
CSCI5160	Advanced Algorithms	3	This course will study the design and analysis of exact and approximation algorithms using advanced techniques such as combinatorial methods, probabilistic methods, linear programming, semidefinite programming, and spectral methods.	_	A-F	English	_
CSCI5210	Advanced Computer Graphics and Visualization	3	This course provide in-depth treatment of the following advanced computer graphics and visualization topics: radiosity rendering and global illumination, procedure texturing and modeling, image- based rendering, stereo imaging, real-time volume graphics and interactive visualization.	_	A-F	English	Students are expected to have taken CSCI3260 or its equivalent
CSCI5320	Topics in Graph Algorithms	3	This course will discuss graph theory and graph algorithms with emphasis on the algorithmic aspects of graph theory. The course will cover classical topics such as search techniques, connectivity, colouring, matching and covering, network flows, planarity, traversability, perfect graphs, and NP-completeness of graph problems. The course will also discuss FPT algorithms for solving graph problems.	Pre-requisites: CSCI3160	A-F	English	_
CSCI5600	Advanced Topics in Distributed Systems	3	This course aims to cover research topics on distributed systems. Topics including distributed time and global states, distributed coordination and consensus, P2P systems, distributed transactions and concurrency control, distributed replications and synchronization. Case studies about latest distributed systems such as Chord, Paxos and Spanner and research papers from top conferences will be discussed.	Pre-requisites: CSCI3150 & CSCI3170 (for UG students)	A-F	English	Students are expected to have solid foundations on operating systems and database systems
CSCI5610	Advanced Data Structures	3	This course introduces advanced techniques for designing data structures with strong theoretical guarantees. Topics to be covered include (i) generic methods such as partial persistence, logarithmic rebuilding, weight balancing, filtering, independent sampling, bit twiddling, tabulating, etc., and (ii) specific structures such as the interval tree, the priority search tree, cuckoo hashing, the van Emde Boas structure, range min structures, locality sensitive hashing, the suffix tree, the count-min sketch, etc.	Pre-requisites:CSCI2100 or ESTR2102 (for UG students)	A-F	English	_
DSME5121	Econometric Theory and Applications	3	This course is designed for business Ph.D. students who need to apply econometrics in their research. The major contents of this course will focus on two parts. The first part will cover fundamental econometrics topics such as ordinary least squares, instrumental variable estimation, panel data models, and generalized linear model. The second part will cover topics about business causal inference by either randomized field/lab experiments or natural experiments such as matching, difference-in-differences, and regression discontinuity design. This course is a graduate econometrics course that emphasizes application in practice. Knowledge of multivariate calculus, linear algebra, statistics, and econometrics at the undergraduate level is preferred.	_	A-F	English	_
DSME6622	Advanced MIS Research Seminar	3	This course provides students with a broad-based exposure to research in MIS and its research methodologies, including survey, case study, experimental design, and field work. Various theories used in MIS research will also be discussed to provide students with background on approaches to theory building and theory testing. Seminal MIS articles will be reviewed to orient students to the emergence of MIS discipline and its research tradition and trend.	_	A-F	English	_
EASC5010	Solid and Fluid Mechanics	3	This course presents the fundamentals of continuum mechanics illustrated with earth system science applications. Background materials on matrices, vectors and differential operators are first reviewed. The following topics will be covered: tensors and their properties; stress and strain; constitutive equations for Hookean elastic solid and Newtonian viscous fluid; mechanical properties and rheology of geomaterials; Eulerian and Lagrangian kinematics; momentum equations; vorticity and divergence; applications in geomechanics, seismology, atmospheric dynamics, and oceanography.	_	A-F	English	Subject to teacher’s approval on individual application

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EASC5103	Aerosol Physics and Chemistry	3	Knowledge of aerosol physics and chemistry such as condensation and evaporation; thermodynamics; radiative, hygroscopic properties, and cloud formation potential of aerosols; Recent advances in aerosol physics and chemistry researches; Roles of atmospheric aerosols on the critical environmental issues such as air quality, tropospheric smog, and climate change, with focus on observations, laboratory measurements and modelling.	_	A-F	English	Subject to teacher's approval on individual application
EASC5104	Advanced Topics in Atmospheric Dynamics	3	This course introduces the basics of geophysical fluid dynamics. Topics include fundamental governing equations, scale analyses of geophysical flows in the Earth's atmosphere and ocean, filtered models, waves, vorticity, quasi-geostrophic theory, bartropic and baroclinic instabilities.	_	A-F	English	Subject to teacher's approval on individual application
EASC5140	Seismology	3	This course focuses on the concepts and theory of elastic wave propagation and physics of earthquake. The topics covered include the Earth's internal structure, material elasticity, travel time tomography, seismic ray theory, ray tracing, and earthquake source parameter. Methods and field practice of seismological survey and programming methods of data processing will also be introduced.	_	A-F	English	Subject to teacher's approval on individual application
EASC5520	Numerical Methods and Modeling for Earth and Atmospheric Sciences	3	This course covers the principles of numerical methods and modeling relevant for earth and atmospheric sciences applications. Topics include: optimization; interpolation; finite differencing; numerical solutions to ordinary and partial differential equations; programming numerical models; filtered models; boundary conditions; subgrid-scale processes; data assimilation; applications in earthquake, climate, air quality, weather forecast and groundwater models. Python will be used in this course.	_	A-F	English	Subject to teacher's approval on individual application
ECON5150	Applied Econometrics	3	Please visit: https://www.econ.cuhk.edu.hk/econ/en-gb/programs/curriculum/course-offered/postg	Graduate Econometrics or Mathematical Statistics	A-F	English	_
ECON5160	Game Theory	3	Please visit: https://www.econ.cuhk.edu.hk/econ/en-gb/programs/curriculum/course-offered/postg	Graduate Microeconomics and Macroeconomics	A-F	English	_
ECON5480	Industrial Organization	3	Please visit: https://www.econ.cuhk.edu.hk/econ/en-gb/programs/curriculum/course-offered/postg	Graduate Microeconomics and Econometrics	A-F	English	_
ELEG5060	Functional Analysis and Approximation Theory	3	This course will provide graduate students with a panorama of functional analysis and approximation theory in multiple dimensions, adopting a systematic dual point of view (functions defined through a collection of measurements, weak formulations). The emphasis will be laid on the simplest, albeit modern mathematical concepts and mechanisms, with a view to avoid extraneous formalism and more abstract (e.g., topological) considerations. This knowledge will be used to modelise engineering problems (e.g., data acquisition, sampling), to devise methods for solving exactly or approximately the inverse problems that are related (e.g., resulting from partial differential equations), and to analyse the error resulting from the approximations.	_	A-F	English	Quota for visiting students: 5
ENGE5260	Life Writing	3	This course examines the genre of autobiography, one of the most popular forms of writing in the contemporary world. The course will cover such topics as the nature of memory, the reliable/unreliable narrator, public and private interpretations of life, and identification/identity in terms of such factors as race, class, gender, language, and culture. Students will become familiar with concepts such as autobiography, biography, narrative, memoirs, historiographic fiction, bildungsroman, and the blurring between truth and fiction in text.	_	A-F	English	Subject to approval by the division head
ENGE5310	Science Fiction and Utopia	3	This course examines the political and social dimension of science fiction writing. It does so by interrogating the differe forms of utopia and dystopia presented in a number of science fiction films and novels. The course begins by tracing the concept of utopia back to its early literary origins in order to reveal its deeply political nature. Following this, we begin to think about the different forms of utopia and dystopia presented in science fiction writing, and begin to develop an understanding of utopia and dystopia as the product of a distinct critique of contemporary society. To this end, the course critiques three main staging grounds of utopia in science fiction – society; time and space; and, the body.	_	A-F	English	Subject to approval by the division head

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ENGE5420	Sociolinguistics	3	This course provides a survey of the relationship between social variables (e.g., age, gender, ethnicity, attitude, style, location, time, social status, power, politics, and network membership) and variations in language in use. Some key areas covered include language attitudes and choice, language maintenance and shift, code alternation, contact languages, standard and vernacular languages, language planning and policy, regional and social dialects, influences of age and gender on language in use, politeness theory, linguistic stereotyping, as well as culture and language. Sociolinguistic research methods are also introduced.	_	A-F	English	Subject to approval by the division head
ENGE5430	Second Language Acquisition	3	The course outline template is provided as a checklist and form for teachers to use in preparing course catalog for inputting to the Chinese University Student Information System (CUSIS) for undergraduate and/or postgraduate courses and for preparing course outline for students. It gives a 'road map' or rationale to students about the purpose and structure of the course, and it explains to them how their learning performance in the course will be assessed and graded. It is important that course catalog and outline are consistent with the University's teaching and learning policy. The 14 sections in a course outline are described below. Sections 1–10 are required in course catalog for course approval; these sections will be stored in CUSIS. Information in sections 11–14 should be provided each time a course is offered. Please feel free to adapt this current template format, especially sections 11–14, to suit the needs of your course(s).	_	A-F	English	Subject to approval by the division head
ENGE5440	Language and Intercultural Communication	3	This course examines the relationship between language and intercultural communication theory, research, and practice to better understand communication between people who have a different linguistic and cultural background. Core concepts in this course include: conceptions of culture and interculturality; the relationship between language, culture, communication, and power; language, culture, and identity; race and ethnicity; generalizations and stereotypes; second language (L2) socialization; L2/intercultural transition and adaptation; intercultural relationship development; intercultural communicative competence; English as the primary language of intercultural/international communication; the role of culture in English language teaching and learning; intercultural pedagogy and assessment. This course will consist of lectures, readings, discussions, a reading-summary presentation, and a major project (individually or in pairs).	_	A-F	English	Subject to approval by the division head
ENGE5600B	Special Topics in Applied English Linguistics: Language Policy and Planning	3	Language Policy and Planning (LPP) studies the linguistic, sociocultural, economic, educational, and socio-political meanings of the decisions about the use, role, and status of languages in different 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 also engages students in critical analyses of how language policies are interconnected with identity (e.g., race, ethnicity, and social class), learning, and social 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 languages.	_	A-F	English	Subject to approval by the division head
ENGE5620	The Acquisition and Teaching of L2 Pronunciation	3	This course presents students with the contemporary issues in applied English linguistics in second language pronunciation acquisition and teaching. It aims at enhancing student's knowledge and awareness of English pronunciation and the phonetic and phonological difference between English and the learner's native language. The course also aims at discussing the theories and approaches which are relevant to the acquisition and teaching of L2 pronunciation.	_	A-F	English	Subject to approval by the division head
ENGE5720	Comparative Approaches in Literary Studies	3	The course serves as an introduction to the advanced study of literature from comparative perspectives. With a view to enhancing their ability in identifying problems and topics for research, students will be familiarized, through team-work instruction, with the basic techniques and methods of bibliographical research and textual criticism. This will involve the use of specific primary texts. Emphasis will be put on giving the students an overview of historical as well as current research in the field. The concept of comparative literature will be investigated along with the various cultural as well as literary issues particularly involved in the studies of literature in the Chinese-Western context. Traditional areas of research, such as influence and reception, themes and motifs, genres and forms, and interrelations of literature and art, will be reviewed in the light of recent literary and cultural theories. In this course students will have to read major literar and critical texts with regard to the various perspectives on comparative literature.	_	A-F	English	Subject to approval by the division head

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ENGE5850	Special Topic(s) in Literary History	3	Specific area(s) of investigation will be defined every year to cover one or more of the following aspects in the critical and comparative studies of literary history: influence and reception; period and movement; literary ideas and intellectual history; historicism; neohistoricism; classicism; neo-classicism; romanticism; symbolism; realism; modernism; postmodernism; functions and theories of literary history; perspectives of historical criticism; concepts of literary tradition; concepts of literary system; literary history and literary reception; feminist perspectives; materialist perspectives; problems of textuality and intertextuality. The chosen area(s) of investigation will use texts from all three major genres of poetry, drama, and fiction. Subject to the approval of the Division Head, 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
ENGE5950	Special Topic(s) in Critical Studies: The Gothic in the Romantic Era	3	This course is designed to investigate areas of specialisation normally not covered under generic studies or literary history. It may involve any one of the following areas in the comparative and interdisciplinary studies of literature: thematology, textual criticism and reader response, aesthetics, Western critical theories and Chinese literary studies, problems in the histories of literary criticism; twentieth-century critical theories; literature and the other arts; literature and sociology; literature and philosophy; literature and history; literature and language; literature and culture. Subject to the approval of the Division Head, 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
ENGG5104	Image Processing and Computer Vision	3	This course will cover fundamental knowledge and advanced topics in image processing and computer vision, including feature detection, segmentation, motion estimation, panorama construction, 3D reconstruction, scene detection and classification, color image processing and restoration. Applications in computer graphics will also be introduced, including image transformation, and camera calibration. Basic concepts of related algorithms and mathematic background will be discussed.	_	A-F	English	Exclusion: CMSC5711 or CSCI5280
ENGG5282	Nanoelectronics	3	Review of semiconductor physics. Electrons in nanostructures: density of states, quantum confinement, transport properties, nanocontacts, Coulomb blockade. Nanoscale fabrication and synthesis: lithography, nanopatternning, epitaxy and heterostructure, self-assembly, other techniques. Nanoscale characterization: scanning probe microscopy and other microscopic techniques, nanoscale electrical measurements. Nanoscale devices: nano- MOSFETs; carbon nanotube devices, nanowire- and nanoparticle-based devices, organic thin film devices, molecular electronic devices, applications, and commercialization.	ELEG2510 or equivalent	A-F	English	Quota for visiting students: 5
ENGG5303	Advanced Wireless Communications	3	This course provides an extensive introduction to basic principles and advanced techniques in the physical layer of wireless communications. Topics to be covered include channel coding, MIMO and space-time processing, OFDM and multicarrier systems, spread spectrum and CDMA, channel capacity, opportunistic scheduling and diversity schemes. Advisory: A prior undergraduate level course in wireless communication is highly recommended.	_	A-F	English	_
ENGG5403	Linear System Theory & Design	3	Linear system theory and design is the core of modern control approaches, such as optimal, robust, adaptive and multivariable control. This course aims to develop a solid understanding of the fundamentals of linear systems analysis and design using the state space approach. Topics covered include state space representation of systems; solution of state equations; stability analysis; controllability and observability; linear state feedback design; observer and compensator design, advanced multivariable control systems design, decoupling and servo control. This course is a must for higher degree students in control engineering, robotics or servo engineering. It is also very useful for those who are interested in signal processing and computer engineering.	_	A-F	English	_
ENGG5601	Principles of Biomechanics and Biomaterials	3	This course focuses on biomechanics (biostatics, biodynamics, mechanics of biological solids), biomaterials (metals, ceramics, synthetic polymers, natural polymers, composites; characterization of biomaterials; biomaterial scaffolds for regenerative medicine) & clinical applications in the musculoskeletal system (including, sports, traumatology, and rehabilitation), cardiovascular system, and dentistry.	_	A-F	English	Quota for visiting students: 5
IERG5200	Channel Coding and Modulation	3	This course covers classic and new channel coding, and related modulation schemes. Topics include Reed-Solomon codes, convolutional codes, concatenated codes, low-density parity-check (LDPC) codes, and optionally, OFDM, MIMO, and network coding.	_	A-F	English	_

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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 application 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, Ardunio, 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	_
IERG5340	IT Innovation and Entrepreneurship	3	Entrepreneur characteristics; product innovation: factors driving innovation, creation and evaluation of new product ideas, risk assessment of commercialization, critical factors for success; business planning: market assessment and strategy, business model, product planning, financial planning, cash flow; financing options, negotiation and deals; formation of a new venture: team, company and product building; execution and dealing with reality; exit strategies; case studies related to innovation and entrepreneurship in information engineering.	_	A-F	English	_
IERG5590	Advanced Topics in Blockchain	3	This course aims to cover advanced topics on blockchain. The focus will be on advanced topics like permissionless blockchain, Ethereum, smart contract, mining pool, permissioned blockchain, anonymity, new consensus, sidechain, ripple, offchain and lightning network.	_	A-F	English	_
IERG6120	Advanced Topics in Information Engineering I (WiFi Signals and Systems)	3	This course aims at introducing students to the operating principles of Wi-Fi signals and systems. This includes the generation, transmission, and reception of Wi-Fi signals, as well as the exploitation of Wi-Fi signals for other purposes, such as time synchronization, device-free wireless sensing, device authentication, and key generation. The course will adopt an experiment-based teaching and learning approach. In particular, the course will teach both principles and implementations of various signal/data processing algorithms that can deal with real-world Wi-Fi signals. These signals are emitted by commodity Wi-Fi devices and captured by software-defined radio equipment. The course will use Matlab to process the captured signals. The first half of the course will concentrate on implementing and evaluating an 802.11-compatible wireless link in Matlab. Various building blocks of such links, including baseband QAM modulation and demodulation, orthogonal frequency division multiplexing (OFDM) modulation and demodulation, frequency offset estimation and correction, packet detection, and channel estimation and equalization, will be discussed, implemented, and evaluated. We will then apply the Matlab program to decode the real-world Wi-Fi signals transmitted by commodity Wi-Fi devices. The second half of the course will involve more advanced topics on Wi-Fi signals and systems, such as time synchronization, time-division multiple access (TDMA), multi-antenna signal transmission and reception, device-free Wi-Fi sensing (e.g., using Wi-Fi to count people and using Wi-Fi to recognize gestures), Wi-Fi device authentication, physical layer key generation, and transmission of Wi-Fi signals over visible light. The latest results from the research literature related to these topics will be shared and discussed. These advcanced topics can vary from year to year. Advisory note: Students are expected to have background in Signals and Systems, Digital Communications, and Digital Signal Processing. Basic Matlab programming skills are required.	_	A-F	English	_
IERG6300	Theory of Probability	3	The course covers the following topics: Construction of measures, integration, transformation, product spaces, distributions, expectation, Borel-Cantelli lemmas, characteristic functions, weak convergence, independence, weak law of large numbers, strong law of large numbers, central limit theorem, conditional expectation, Markov chains, stopping times and renewal times, martingales, martingale convergence Theorems, Doob's decomposition theorem, up-crossing inequality, and Birkhoff's ergodic theorem. The focus will be on mathematical rigor and development of all the tools to prove the results formally. Advisory: Students are expected to have basic background in probability and real analysis at undergraduate level.	_	A-F	English	_
LING6903	Syntactic Theory	3	This course provides students with a concise and critical introduction to the central issues and perennial problems in syntactic theory, with special focus on the Government and Binding Theory and the Minimalist Program. Through exercises, class discussions, and presentations, students will gain a solid understanding of the concepts and principles which have been of central significance in the recent development of syntactic theory. Whenever relevant, data from Mandarin and other languages will be used to motivate and instantiate the analyses that pertain to the central issues in syntactic theory.	_	A-F	English	_

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LING6904	Topics in Phonetics	3	This course introduce major theories and research topics in phonetics. Issues in both speech production and perception will be introduced. Both segmental and suprasegmental aspects of speech sounds will be investigate. Emphasis will be placed on the acoustic nature of speck sounds. Phonetic interfaces with other sub-branches of linguistics will also be discussed. Students will gain a good understanding of the complex of speech communication.	_	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	_
LING6980	Research Methodology	3	The course adopts an interactive, problem-based approach, with an aim to training students in conducting linguistics research on a topic of their interest. Focus will be on linguistic analysis and empirical methods in language research. Students may be required to conduct linguistic research through field trips.	_	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 o 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	_
MAEG5110	Quantum Control and Quantum Information	3	The field of quantum information science includes quantum control and quantum information. It is a new area of inter-disciplinary research involving physicists, computer scientists, mathematicians and engineers. The course is an introduction to this rapidly expanding field. It covers basic quantum mechanics including quantum entanglement and quantum measurement; the modeling and control of quantum mechanical systems; quantum error correction; quantum communication and quantum information theory.	_	A-F	English	_
MAEG5120	Nanomaterials and Nanotechnology: Fundamentals and Applications	3	This course provides both fundamental knowledge of nanomaterials and nanotechnology and advanced topics related to applications. These topics cover basic principles, which include the scaling law, the surface science for nanomaterials, observation and characterization tools for nanomaterials, the nanofabrication techniques, building blocks for nanodevices and systems, etc. In the second half of this course, advanced topics on applying nanomaterials and nanotechnology for applications in mechanical engineering, energy engineering and biomedical engineering will be covered.	_	A-F	English	_
MEDP6003	Biostatistics	1	This is a course in biostatistics which is compulsory to be taken during the course of studies for M.Phil. or Ph.D. students in the Faculty of Medicine, CUHK. This course will cover below topics: - ANOVA I - ANOVA II / Nonparametric tests - Correlation / Linear regression I - Linear regression II / Logistic Regression	Passed MED6002 Biostatistics in Term 1	A-F	English	Quota for visiting students: 10
MGNT6022	Advanced Seminar in Human Resources Management and Organizational Behaviour	3	This course is about organizational dynamics in managing human resources at the individual and group levels of analysis. We are particularly interested in outcomes such as performance, citizenship behaviors, job satisfaction, organizational commitment, and turnover and their managerial implications. Individual, relational, and organizational factors affecting these outcomes, including individual characteristics, justice, leadership, team dynamics, motivation, and interpersonal relationship at work, will be discussed.	_	A-F	English	_

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

(2021-22, Term 2)

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
MGNT6232	Advanced Seminar in Management Theory	3	This course is an advanced seminar in management theory. The theoretical perspectives emphasized in the course include: 1) transaction cost theory; 2) agency cost theory; 3) institutional theory; 4) organizational ecology/recourse dependence theory; 5) organization learning; 6) resource-based view of the firm; 7) knowledge-based view of the firm; 8) evolutionary perspective of organizations; 9) developing a research proposal; 10) philosophy of science; 11) formulating the research problem or question; 12) grounded methods of problem formulation; and 13) building theory. Each perspective will be studied by examining and contrasting the main theoretical statements in depth, then critically discussed and evaluated.	_	A-F	English	_
MKTG7162	Advanced Seminar in Marketing - Analytical Models	3	This seminar course emphasizes on analytical modeling methods in marketing studies. It will cover a wide range of topic including consumer search models, marketing-mix models, competitive marketing strategies, behavioral industrial organization, and research advances in e-marketing. The course will also introduce some basic analytical tools from area of decision science, economics, and statistics.	_	A-F	English	_
PHYS5320	Photonics: Materials and Devices	3	A broad survey of the materials used and the generation, transmission, modulation, detection and harvesting of light by various optoelectronic devices. Emphases are placed on the operational principles and applications of both devices and materials in communications, data processing, light emission, lasing, light control, photovoltaics and photodetection, as well as on related state-of-the-art scientific research.	_	A-F	English	Quota for visiting students: 3
PHYS5420	Classical Electrodynamics	3	This course is intended to provide an introduction to the theory of classical electrodynamics at the graduate level. The emphasis is on the problems of electromagnetic radiation and the covariant formulation of electrodynamics. Selected topics of current research interest will also be discussed.	_	A-F	English	Quota for visiting students: 3
PHYS5510	Topics in Theoretical Physics (Advanced Statistical Mechanics)	3	This course provides an introduction to the major ideas and methods in equilibrium statistical mechanics as well as in nonequilibrium statistical physics. Topics will be selected from the statistical mechanics of magnetic systems; interacting fluids and soft matter; theory of critical phenomena and the renormalization group; stochastic dynamics and nonequilibrium processes; introduction to quantum statistical mechanics; and other topics of current interest in statistical physics.	_	A-F	English	_
PHYS5620	Topics in Experimental Physics (Thin Film Physics and Technology)	3	This course provides an introduction to the physical properties of thin films as well as the preparation methods. Topics covered include: vacuum science and technology, thin film deposition techniques, growth processes and modes, characterization, epitaxy, lattice engineering, optical and electrical properties of thin films. State-of-the-art scientific research on thin film preparation and properties will also be selectively introduced.	_	A-F	English	_
PUBH6004	Environmental Health and Risk Assessment	1	Through a few selected important topics, this course examines how environmental factors have an impact to the health of people and the community, and what we can do to prevent or minimize the negative impacts. This course will cover below topics: - Environment and health - Work and health - Air pollution and health - Risk assessment in environmental health	_	A-F	English	Quota for visiting students: 5
SEEM5360	Term Structure Modeling of Interest Rates	3	The course is a systematic introduction to the development, analysis and implementation of interest rate models for pricing and hedging of fixed income derivatives. The materials will span the following aspects: linear interest rate product and yield curve construction; vanilla interest rate options and single rate models; interest rate exotics and the modeling of rates term structure. If time permits, we will also discuss typical trading strategies in the fixed income space, as well as hedging and management of interest rate exposures for fixed income portfolios, cash or derivative.	SEEM5340 or equivalent	A-F	English	_
SEEM5380	Optimization Methods for High-Dimensional Statistics	3	The prevalence of high-dimensional data has motivated active research on efficient methods for tackling optimization problems that arise in statistical analysis. In this course, we will give an introduction to this exciting area of research, with emphasis on the theory of structured regularizers for high-dimensional statistics and the design and analysis of statistically and computationally efficient optimization algorithms. Applications in various areas of science and engineering, such as machine learning, signal processing, and statistics, will also be discussed. Students are expected to have taken ENGG 5501 or equivalent.	ENGG5501 or equivalent	A-F	English	_

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(2021-22, Term 2)

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
SEEM5650	Integer Programming	3	The course deals with theory and algorithms for solving integer and combinatorial optimization problems. Theoretical topics include general concepts such as relaxations, bounds, duality, and total unimodularity. Solution methods cover branch-and-bound, cutting planes, branch-and-cut, Lagrangian relaxations, local search, and metaheuristics. Optimizatio software and programming languages will be used to implement the methods for solving optimization problems.	_	A-F	English	_
SEEM5670	Advanced Models in Financial Engineering	3	This course covers various applications of engineering technicalities in financial modeling. Emphasis will be on two main topics: investment portfolio optimization and financial derivative pricing. We introduce dynamic programming approach, martingale and PDE numerical solutions, Monte Carlo simulation methods for solving these two problems.	_	A-F	English	_
SEEM5680	Text Mining Models and Application	3	This course covers basic mining models that are able to discover useful patterns and knowledge from text data. The form of text data ranges from semi-structured representation to free natural language texts. It discusses retrieval models as well as learning models based on user feedback. It also covers advanced models including language modeling, automatic entity extraction, and machine learning models suitable for text. Text mining applications such as knowledge management are presented.	_	A-F	English	_
SOCI6003	Advanced Statistical Analysis統計分析進階	3	This course will cover techniques dealing with linear and nonlinear models, including OLS regression, logistic regression and Poisson regression. The objective is to enable students to analyze different types of data. Advanced modeling techniques, such as fixed and random-effects models and event history analysis will also be briefly discussed. Students will be required to use some of these methods to perform analysis on real data.	_	A-F	English	_
SOCI6004	Advanced Qualitative Methods定質研究進階	3	This course examines qualitative methods used in social science research. Since qualitative research is both an 'analytic mentality' and a set of practical skills, the course will focus both discussions of key methodological and empirical readings as well as on practical skills, such as case and informant selection, field experiences, interview techniques, writing field notes, and analyzing and writing qualitative data. The course is in a seminar format. Lectures will be interwoven with discussions. Students are also required to conduct a small-scale pilot qualitative research project using the skills discussed in the seminar.	_	A-F	English	_
STAT5030	Linear Models	3	This course introduces fundamental elements related to linear statistical models. The major substance of this course covers: classical distribution theory; full-rank linear models; non-full-rank linear models; advanced topics related to modern linear models, including penalized regression, variable selection and screening methods, etc.	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
STAT6040	Studies on Selected Topics II	3	This is a graduate-level seminar course. Recent topics on computer-intensive statistical method are selected for discussion. For this semester, the topics are on probabilistic modelling and computing through Bioinformatics.	Undergraduate level probability and statistical inference	A-F	English	Quota for visiting students:10