

**Course list for Cross-institutional Course/Subject Enrolment Scheme for Research Postgraduate Students
(2024-25, 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
AIST5030	Generative Artificial Intelligence	3	The course aims at equipping students with an overview of latest generative AI (GenAI) technologies that generate various types of data, e.g., images, videos, audios, text, code, music and molecules, etc. that are profoundly impacting the industry and society. The course will provide a comprehensive understanding of the fundamental concepts and techniques behind GenAI, including generative models, probabilistic models, deep learning architectures, and self-supervised/unsupervised learning, etc. The advanced topics of large language models, conversational AI and multi-modality generative AI will be further explored. Applications on speech and conversational data will be introduced to illustrate the concepts and techniques of GenAI. The ethical and social implications of GenAI will also be discussed in the course, so that students can critically analyze the impact of GenAI on society and propose ethical guidelines for its development and deployment. Ample opportunities will be provided to students to apply what they have learned in class through hands-on implementation and research paper on course projects. The course is suitable for students who have some background in machine learning, probability, statistics, and linear algebra.	-	A-F	English	-
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. https://www.arts.cuhk.edu.hk/~ant/wp-content/uploads/PDF/CourseSyllabus2024-25Term2/ANTH6020.pdf	-	A-F	English	-
CHEM5303	Recent Development of Nanoscience and Nanotechnology	2	Minimization of materials to the nanometer scale imposes new properties and functions on nanomaterials. This course will introduce the underlying principles and applications of the emerging field of Nanoscience and Nanotechnology. Tools and principles relevant at the nanoscale dimension will be introduced. Current and future nanotechnology applications will be discussed in chemistry, physics, biology, engineering, materials, electronics, and energy. Through guided literature review and interactive guest lectures, the very recent research progress and prospective applications of nanomaterials and nanotechnology will be demonstrated to deepen postgraduate students' understanding to current status and challenges of nanoscience.	The student should have taken a course in Materials Chemistry, Materials Science, or equivalent.	A-F	English	Quota for visiting students: 5
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	-
CHLL6151	Special Topics in Chinese Linguistics I	3	Traditional philology and modern linguistics, with emphasis on special topics, authors or schools.	-	A-F	Putonghua	-
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	-
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: 2
COMM6320	Digital Research	3	How has the rise of digital media, new data landscape, and computational tools transformed the process of knowledge generation and academic production? In preparing students to engage with this digital social and research environment, this course has three interrelated foci: (1) To introduce epistemological and ontological perspectives on the concepts of data, analytics, and knowledge production; (2) To discuss emerging theoretical approaches to studying digital media-rich phenomenon; (3) To provide basic training on selecting digital data analytic tools and techniques, with an aim to incorporate these skills in research projects.	-	A-F	English	Quota for visiting students: 5
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. Advisory: Students are expected to have taken CSCI2110 or ENGG2440 or ESTR2004, ENGG2040 or ENGG2430 or ESTR2002.	-	A-F	English	-
CSCI5370	Quantum Computing	3	This course provides an introduction to the following topics in quantum computation: 1. Models of quantum computation and communication; 2. Quantum algorithms and their limitations; 3. Other topics (quantum communication, quantum cryptography, quantum proofs, quantum error correction, quantum supremacy).	-	A-F	English	-
CSCI5640	Natural Language Processing	3	Natural language processing (NLP) is a crucial part of artificial intelligence (AI), which aims to endow computers with the ability to process human language. This course gives an overview of modern deep learning techniques for natural language processing. The course starts with basic linguistic concepts in NLP and moves from shallow bag-of-words representations to richer structural embeddings, which is the foundation for the successful use of deep learning in NLP. Then the course will guide you through three fundamental tasks of NLP: language modeling (LM), natural language understanding (NLU), and natural language generation (NLG), followed by some recent advances such as BERT and adversarial learning. Along the way we will introduce cutting-edge computational models together with insights from a linguistic perspective. Advisory: Students are expected to have the background of deep learning, machine learning, linear algebra, programming, and data structure.	-	A-F	English	-
CULS6001	The Making of Contemporary Culture	3	This course aims to acquaint research postgraduate students with critical frameworks for theorizing and analyzing culture. Highlighting the practice of knowledge production in scholarship, it will examine different, interdisciplinary approaches to data collection and close reading. It begins by looking at how culture has conventionally been defined and examined in Cultural Studies, alongside similar disciplines such as Comparative Literature, Film Studies, Media Studies, Visual Studies, Cultural History, and Cultural Anthropology. Revisiting prominent works, class discussions will dissect the important vocabulary of various subfields. Seeing Cultural Studies as contextual and historical, the course explores how it has expanded its thematic and geographic scope to encompass the diverse conditions of marginalized and understudied contexts and experiences.	-	A-F	English	-
DOT5121	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	-

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DOTE6635	Artificial Intelligence for Business Research	3	Modern artificial intelligence (AI) has largely reshaped our world over the past 10 years. This course is designed to prepare students from a broad range of business areas (e.g. Finance, Marketing, Accounting, Management, Operations, Information Systems, Business Economics, Hotel Management etc.) for the cutting-edge research that connects AI and business. At a high-level, students taking this course will learn the following: <ul style="list-style-type: none"> Fundamental concepts/methods of machine learning (ML) and AI that are used in business research; How business researchers have utilized ML/AI and what managerial questions have been addressed by ML/AI in the past several years; The huge mismatch between AI technologies and the adoption of AI technologies in our fields. 	-	A-F	English	-
EASC5020	Soil Mechanics and Its Applications	3	A survey of basic concepts of soil mechanics: Classification and physical properties of soil; stress and strain; pore pressure, seepage theory and effective stress; elastic solutions; shear strength and Mohr-Coulomb theory; failure mode and criteria; soil consolidation; lateral earth pressure; slope stability; bearing capacity and foundation designs; pile analyses and designs; soil improvement and soil nailing. Geotechnical applications: shallow and deep foundations; retaining structures; slope instability.	-	A-F	English	Subject to teacher's approval on individual application.
EASC5150	Volcanoes	3	On any given day, ~20 subaerial volcanoes worldwide are erupting. Even more submarine volcanoes are probably erupting without being detected. Volcanic eruptions can have devastating economic and social consequences, but are also the fundamental force that builds the majority of our planet's surface. Volcanic eruptions and emissions can also affect atmospheric and climate conditions. This course will explore the various techniques used to study volcanoes' underlying structure as well as their precursory and eruptive activity.	-	A-F	English	Subject to teacher's approval on individual application.
EASC5510	Statistical Methods and Data Analysis for Earth and Atmospheric Sciences	3	This course covers the theoretical basis and practical applications of data analysis relevant for earth system science. This course aims to introduce students to Earth and environmental data manipulation, from sampling, reading and writing, to statistical analysis and parameter estimation, to time series analysis, to plotting and visualization. Topics include: digital signal processing, sampling techniques; probability distributions; hypothesis testing; correlation analysis; linear and nonlinear regression; statistical forecasting, harmonic analysis and spectral analysis; principle component analysis; and geostatistics. Tutorials will be based on real geophysical examples including remote sensing and in situ observations, as well as model data. Previous elementary coding experience in Python 3 is recommended.	-	A-F	English	Subject to teacher's approval on individual application.
EASC5540	Remote Sensing – Principles and Applications	3	Remote sensing observations are critical for monitoring regional and global changes, determining spatial and temporal variability of the Earth System, and addressing fundamental global issues. This course introduces the basic physical principles of remote sensing, including electromagnetic waves and radiation, optical, microwave, and non-imaging remote sensing. It also presents key concepts and examples on remote sensing applications in Earth system science, such as the atmosphere, lithosphere, hydrosphere, cryosphere, and global changes. This course also provides computer-based lab exercises that facilitate the understanding of remote sensing principles and the processing of remote sensing data.	-	A-F	English	Subject to teacher's approval on individual application.
ECON5150	Applied Econometrics	3	This is a graduate level course in applied econometrics. Both microeconomic theory and empirical strategies for applied econometric research will be discussed. Modern causal inference including machine learning tools and big data analysis will be introduced. This course will discuss instrumental variable methods, treatment effect, matching, panel data models, differences-in-differences, regression discontinuity designs, binary response model, censored data, and modern causal inference topics including machine learning in causal inference, and so on. Students are advised to take ECON5120/ ECON5121/ ECON5122 before taking this course.	Graduate Econometrics or Mathematical Statistics	A-F	English	-
ECON5160	Game Theory	3	This is an advanced course on game theory. We will cover topics in strategic games, extensive games of complete and incomplete information, epistemic foundations of game theory, repeated games, bargaining theory, coalitional games and matching theory. We will also discuss various applications of game theory in Economics.	Graduate Microeconomics and Macroeconomics	A-F	English	-
ECON5480	Industrial Organization	3	The course provides an overview of selected topics in industrial organization. Both theories and empirical approaches will be used. Court cases and legal materials will be used to illustrate the applications of various concepts in industrial organization.	Graduate Microeconomics and Econometrics	A-F	English	-
ENGE5200	What is Fiction?	3	What are the consequences of a world in which AI-generated content, fake news, and social media have increasingly eroded the boundary between truth and falsity, and how do these consequences impact the study and understanding of literature, the imaginative medium par excellence? This course will explore these questions by examining the concept of fiction, how it is manifested in various genres and forms, and what role it plays for writers and readers in contemporary society. Tracing its historical development, we will investigate the concept of fiction as a crucial dimension across time in various communicative contexts, including but not limited to literary discourse. Through analyzing examples ranging from novels and storytelling to non-fictional genres, including autobiographical discourses, documentaries, social media, and political speeches, students will learn how to evaluate and appreciate dominant perspectives within fiction theory, including panfictionalism, similarism, separationism, speech act theory, and possible worlds semantics. Students interested in gaining the theoretical and analytical tools to understand the many uses of fiction, its roles, effects, and potential consequences in contemporary society are welcome to join the course.	-	A-F	English	-
ENGE5230	Major Author(s): Shakespeare in Performance	3	An intensive study of the life, the imaginative character, and the works of a single author or authors who have played major roles in the development of Western literature. Authors studied may vary from year to year.	-	A-F	English	-
ENGE5240	Creative Writing	3	The course acquaints students with the art of creative writing at an advanced level. Depending on the specialization(s) of the instructor, creative works will be explored and produced in such genres as poetry, short stories, film-scripts, and/or plays. Students will engage in intensive critique of each other's works as well as study the generic conventions of the disciplines which focus the course each year. There will also be some emphasis on exploring local and international publishing or performance avenues.	-	A-F	English	-
ENGE5340	Distant Readings	3	In the context of a world that was beginning to understand the power of "big data," Franco Moretti introduced the notion of "distant reading" to the field of literary studies. A method of literary scholarship that embraced the technological explosion at the end of the twentieth century, Moretti's distant reading looked to transcend a literary studies that he thought of as dominated by the "theological exercise" of close reading – which is to say the "very solemn treatment of very few texts taken very seriously." Distant reading attempted (attempts) to make sense of thousands of texts at the same time. It asks questions that only a survey of tens of thousands of texts can answer – how does the thematic concern of western literature change over the decades... or over the centuries? And not just the thematic concern of the canonical literature we all know, but all western literature (or as much of it as we can recover today!) Such questions cannot be answered by the individual scholar but, as Moretti understood, they can be answered with the aid of computation. This course introduces you to the debates provoked by Moretti's ideas and then moves on to show you how distant reading is practiced today. By way of workshop and project-based learning, you will be introduced to the statistical analysis platforms that computational literary studies scholars use today. You will then learn how to use this software in order to generate your own distant readings of a corpus of texts.	-	A-F	English	-
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	-
ENGE5450	Corpus Linguistics	3	A corpus (plural corpora) is body of written text and/or transcribed speech which can serve as a basis for linguistic analysis and description. This course explores the ways in which corpora can be used to study the frequency and distribution of linguistic items, as well as collocations, keywords, and register variation. Most of the lectures are followed by a practical session, during which students gain hands-on experience in using the corpora and software demonstrated and/or discussed in the lectures. The corpora used include the International Corpus of English (ICE), the British National Corpus (BNC), the Chinese Learner English Corpus (CLEC), and many others. Students will learn how to use standard text retrieval software, including WordSmith, ICECUP, and WMatrix. The course is heavily computer-oriented, but no programming skills are required.	-	A-F	English	-

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ENGE5460	Natural Language Processing for Applied Linguistics and Education	3	This course provides a thorough introduction to common NLP techniques, focusing on how computers analyze, comprehend, produce, and process language. It incorporates a hybrid approach combining lecture segments, presentations, and hands-on activities to discuss how we can make use of various applications and programming codes (in Python) to facilitate research in (applied) linguistics and education. The modules that will be covered in the course include: introduction to language and computers, introduction to Python, preprocessing text, optical character recognition, speech to text, web scraping, frequency and n-gram, vector semantics and embeddings, part-of-speech tagging, constituency parsing, and dependency parsing. Crucially, students are expected to critically think about innovative ways to apply NLP techniques in (applied) linguistics and/or education.	-	A-F	English	-
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	-
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 literary and critical texts with regard to the various perspectives on comparative literature.	-	A-F	English	-
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, nanopatterning, 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
ENGG5403	Linear System Theory and 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
GDRS5083	Making Change: Feminism, Civil Society and Social Transformation	3	This course is for those who aspire to social justice but are short of skills and consciousness. Drawing on feminist and critical theories, and Nonviolent Communication, the course will explore the myths of human nature that stand in the way of a large-scale and sustainable social transformation, and discuss the dynamism between gender, feminisms and civil society. The first four lectures will lay a theoretical foundation that cultivates a need-based perspective, weaving the gap between the personal and the social. On that basis, the course will examine how feminist-inspired campaigns intervene into social issues of significance to contemporary world, namely space, body politics, neoliberalism, and institutional reform. Alternative practices such as restorative justice, shared economy, ecovillages and intentional communities, new ways of governance such as Holacracy and Sociocracy will be introduced.	-	A-F	English	Quota for visiting students: 5
GDRS5086	Gender and Family	3	This course explores the concept of the family as a gendered social construction, considering how the institution of the family perpetuates gender roles and how social changes transform the familial structure at the same time. The course puts a premium on feminist thoughts on the reproduction of gendered family. We'll start with introduction to how family is formed in different cultural contexts, and then proceed to discuss how family and kinship can be redefined under the development of reproductive technology, transnational migration, and globalization. Topics will include familial formation in contemporary patrilineal/matrilineal societies, non-mainstream marriages like walking marriage and bride kidnapping practices, gendered division of labor in conducting housework, the social construction of motherhood, domestic violence, cohabitation, non-married family, single-parent family, gay family, surrogacy, and transnational adoption and so on.	-	A-F	English	Quota for visiting students: 5
GDRS5131	Women and Literature	3	This course explores the historical and theoretical connections between literature and women. Besides the focus on the idea and image of the woman in a selection of literary texts, the course will also examine the roles of women in literary activities.	-	A-F	English	Quota for visiting students: 5
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.	For students in MSc/MPhil-PhD/UG Mechanical and Automation Engineering; or UG Energy and Environmental Engineering; Pre-requisite (for UG students only): [EEEN3030 or ESTR3402 (with grade B or above)] or [with the consent of the course instructor].	A-F	English	-
MGNT6022	Advanced Seminar in Organizational Behavior and Human Resource Management	3	This course is an introduction to theories and research pertaining to individuals and teams in organizations. Topics covered include prosocial and deviant behaviors, creativity and motivation, decision making, affect, trust, justice, leadership, diversity, team dynamics and cross-cultural research.	-	A-F	English	-
MGNT6252	Research Methods in Strategic Management	3	The purpose of this course is to introduce students to a variety of empirical approaches that are employed to investigate questions of interest in strategic management discipline as well as enable students learn about the relevance of the several methodologies that are widely used in the field. In this regard, the course will mainly discuss about the links between research questions and designs, and will also lay emphasis on how to review empirical research in strategic management.	-	A-F	English	Quotas for peer university students: 5 Interested students are advised to contact Professor William Wan first.
MKTG7163	Advanced Seminar in Marketing- Empirical Models	3	This seminar course emphasizes on empirical quantitative models of marketing research. It will cover a wide range of topics including consumer choice modeling, Bayesian modeling, structural modeling, dynamic modeling, data mining, and research advances in marketing. The course will also introduce some basic analytical tools from areas of network analysis, economics, and statistics.	-	A-F	English	-
PHYSS420	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

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PHYS5430	Solid State Theory	3	This course serves as an introduction to the quantum theory of solid state physics at the graduate level. Topics covered include: band theory of electron in a periodic potential, semiclassical theory of electron dynamics, quantum theory of lattice dynamics, electron-phonon interaction, transport properties of solids, superconductivity, and selected topics of current research interest.	-	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	-
SEEM5410	Optimal Control	3	Dynamic continuous-time systems. Examples, modelling, and classification of optimal control problems. Pontryagin's maximum principle: adjoint equation, Hamiltonian system, and sufficient condition of optimality. Bellman's dynamic programming: principle of optimality, Hamilton-Jacobi-Bellman equation, and verification theorem. Linear quadratic control: Riccati equation and linear matrix inequality. Introduction to numerical methods of solving optimal control problems.	-	A-F	English	-
SEEM5650	Integer Programming	3	The course discusses underlying theory and fundamental solution methodologies for linear and nonlinear integer programming. Theoretical topics include general solution concepts such as relaxation, partition and bounds, submodularity, and duality theory. Solution methods covers partial enumeration methods, dynamic programming methods, branch and bound methods, cutting plane methods, convergent Lagrangian dual methods, convexification methods and global descent methods. These methods can be respectively applied to solve separable/non-separable and convex/non-convex integer programming problems, including nonlinear knapsack problems, quadratic integer programming, and zero-one polynomial integer programming. The course also discusses various applications of integer programming in engineering, management and finance.	-	A-F	English	-
SOCI6003	Advanced Statistical Analysis	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 longitudinal data analysis 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	3	This course examines qualitative methods used in social science research. The course focuses on methods rather than methodology. Its emphasis is on equipping participants with the 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
STAT6060	Studies on Selected Topics IV	3	This course will mainly focus on two topics in statistics. One is quantile regression, which extends classical least squares methods for estimating conditional mean functions by offering a variety of methods for estimating conditional quantile functions. The quantile regression enables us to explore more thoroughly heterogeneous covariate effects. The course will offer an introduction to quantile regression methods and briefly survey some recent developments. The other one is random forest, which is an ensemble of regression and classification trees constructed from recursive partitions. It is a powerful tool for prediction and is widely used across many fields. The course will offer an overview of the random forest and focus on one recent development, generalized random forest. Course lectures will be complemented by several computationally oriented interludes designed to give students some experience with applications of the methods. These sessions will be conducted in the opensource R language and will rely heavily on quantreg package, grf package, and other related packages.	Course for MPhil/PHD students or permission of Instructor.	A-F	English	Subject to teacher's approval on individual application. Quota for visiting students: 10