

## **REGULATIONS FOR THE DEGREE OF BACHELOR OF COGNITIVE SCIENCE (BCogSc)**

*(See also General Regulations and Regulations for First Degree Curricula)*

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### **Definitions**

**BCo1<sup>(1)</sup>** In these Regulations, and in the Syllabuses for the degree of BCogSc, unless the context otherwise requires -

‘Department’ means any department teaching in the degree programme;

‘Course’ means a course of instruction which normally carries 6 credits or in some cases 3 credits or multiples of 3, leading to one examination paper as defined in the syllabus;

‘Paper’ means one or more of the following tests: a theoretical examination paper, a practical examination paper, an assessment of field practice, a thesis, and a dissertation, or other assignments as prescribed in the syllabus of the course leading to it;

‘Credits’ means the weight assigned to each course relative to the total study load. The number of credits is indicative of the contact hours and/or study time associated with the course on a weekly basis;

‘Prerequisite’ means a course which candidates must have completed as specified to the satisfaction of the Head of Department before being permitted to take the course in question.

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### **Admission to the degree**

**BCo2** To be eligible for admission to the degree of Bachelor of Cognitive Science candidates shall

- (a) comply with the General Regulations;
  - (b) comply with the Regulations for First Degree Curricula; and
  - (c) complete the curriculum in accordance with the regulations that follow.
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### **Length of study**

**BCo3** The curriculum shall normally extend over three academic years consisting of six semesters of full-time study, excluding the summer semesters. Candidates shall not in any case be permitted to complete the curriculum in more than four academic years, which being the maximum period of registration.

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### **Completion of the curriculum**

**BCo4** To complete the curriculum, candidates shall:

- (a) satisfy the requirements prescribed under (a)(i), (ii), (iii) and (b) of UG3 of the Regulations for First Degree Curricula;
  - (b) enrol in not less than 180 and not more than 216 credits of courses, unless otherwise required or permitted under the Regulations;
  - (c) follow the required number of compulsory and elective courses as prescribed in the syllabuses of the equivalent of normally 60 credits for each year of study. For each semester, candidates shall select not less than 24 and not more than 36 credits of courses, except for the last semester of study; and
  - (d) take a maximum of 66 credits of junior-level courses and the rest being senior-level courses as prescribed in the syllabuses over the entire period of studies;
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<sup>(1)</sup> This regulation should be read in conjunction with UG1 of the Regulations for First Degree Curricula.

### **Selection of courses**

**BCo5** Candidates who wish to change their selection of courses at the beginning of each semester may do so up to 2 weeks after the commencement of the semester. Requests for changes beyond the 2-week deadline will not be permitted, except for medical or other reasons accepted by the Faculty Board, and candidates' withdrawal from any course without permission will be given a failing grade.

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### **Assessment and grades**

**BCo6** Candidates shall be assessed for each of the courses which they have registered. The assessment may take one or a combination of forms as prescribed in the syllabuses and shall normally include the candidates' coursework during the semester. Only those satisfactorily completed courses will earn credits.

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**BCo7** Candidates' performance in a course shall be assessed with the grading system as prescribed in UG5 of the Regulations for First Degree Curricula.

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### **Failure in examination**

**BCo8** Candidates who fail in any course may, as directed by the Board of Examiners, be permitted to present themselves for re-assessment with or without repeating the failed course. The timing and the form(s) of re-assessment shall be decided by the Board of Examiners. Candidates shall not be allowed to repeat a course for which they have achieved a passed grade for upgrading purposes, nor shall they be permitted to repeat a course more than once. The failed grade will be recorded in the official transcripts. The new grade obtained after re-assessment of the same failed course will also be recorded and will replace the previous F grade in the calculation of the weighted grade point averages. As failed courses shall not be credited towards a degree, failed compulsory courses must be re-assessed.

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### **Absence from examination**

**BCo9** Candidates who are unable because of their illness to be present for any written examinations may apply for permission to present themselves for a supplementary examination to be held before the beginning of the first semester of the following academic year. Any such application shall be made on the form prescribed within two weeks of the first day of absence from any examination. Candidates who fail to satisfy the examiners in one or more papers in such a supplementary examination shall be considered under the provisions made in these Regulations for failure at the first attempt at the examination, except that a further supplementary examination shall not be permitted.

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### **Performance assessment**

**BCo10** At the end of each semester, candidates' performance shall be assessed for the purposes of determining

- (a) their eligibility for progression to an award of the degree;
- (b) their eligibility for the award; or
- (c) whether they be required to be discontinued from the programme.

### Progression of studies

- BCo11** Candidates shall be permitted to progress if they have:
- (a) not exceeded the maximum period of registration; and
  - (b) accumulated not less than 30 credits and attained a GPA of 1.00 or above over the first and second semesters; or
  - (c) accumulated not less than 30 credits and attained a GPA of 1.50 or above over the third and fourth semesters; or
  - (d) accumulated not less than 30 credits and attained a GPA of 1.50 or above over the fifth and sixth semesters; or
  - (e) attained a semester GPA of 1.50 or above at the end of each subsequent semester.

Those who have not been able to fulfill the requirements above shall be recommended for discontinuation from the programme under General Regulation G12.

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### Award of the degree

- BCo12** To be eligible for the award of the degree of BCogSc, candidates shall have:
- (a) achieved a weighted GPA of 1.00 or above;
  - (b) successfully accumulated a minimum of 180 credits; and
  - (c) satisfied the requirements in UG3 of the Regulations for First Degree Curricula.
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### Degree classification

**BCo13** A list of candidates who have successfully completed all the degree requirements shall be published in five divisions: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, Pass. The classification of honours shall be determined by the Board of the Faculty at its full discretion by taking the overall performance of candidates and other relevant factors into consideration.

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## SYLLABUSES FOR THE DEGREE OF BACHELOR OF COGNITIVE SCIENCE

### 1. Curriculum requirements

Regulations BCo1 to BCo4 specify the requirements with which candidates have to comply for completion of the BCogSc degree programme. For the fulfillment of Regulation UG3 "Requirements for Graduation", candidates shall complete successfully the three language studies courses as well as a 3-credit broadening course of either Science and Technology Studies or Humanities/Social Sciences Studies, depending on their Arts or Science background and the streams of courses they select.

Furthermore, they should fulfill the Information Technology requirement as stipulated under Regulation UG3 by:

- (a) taking a 3-credit course in Information Technology or
- (b) taking LING1002 or
- (c) obtaining a pass in an Information Technology proficiency test

### 2. Course registration

Course registration will take place before the commencement of each semester. In course registration, candidates should pay special attention to the pre-requisite and co-requisite requirements of courses as specified in the syllabuses. A prerequisite is a course which candidates must have completed in accordance with the conditions stipulated by the Head of Department before being permitted to take a course in question. A co-requisite is a course which candidates must take at the same time as the course in question.

### 3. Coursework and examination ratio

All courses in the curriculum, except the language studies courses and the broadening courses, are of 6 credits. Unless otherwise specified, the examination for each 6-credit course consists of one two-hour written paper and the final grading will be determined by performance in the examination and an assessment of coursework in the ratio of 75:25, unless otherwise specified. For courses offered by the School of Business, the assessment ratio will be announced by teachers at the beginning of each semester.

### 4. Course structure

- a. In the first and second semesters, candidates should take a total of 60 credits of courses comprising the following:

COGN1001. Introduction to cognitive science	(6 credits)
CSIS1117. Computer programming	(6 credits)
CSIS1122. Computer programming II	(6 credits)
LING1001. Introduction to linguistics	(6 credits)
MATH0201. Basic Calculus <u>or</u>	(6 credits)
MATH1804. University Mathematics A	
PHIL1002. The human mind: an introduction to philosophy	(6 credits)
PSYC1001. Introduction to psychology	(6 credits)
STAT0301. Elementary statistical methods <u>or</u>	(6 credits)
STAT1301. Probability & statistics I <u>or</u>	
STAT1306. Introductory Statistics	
ECEN1901. Academic English for Social Sciences	(3 credits)
CSSC1001. Practical Chinese language course for social sciences students <u>or</u>	(3 credits)
CUND0002. Practical Chinese language and Hong Kong society ( <i>for Mainland students only</i> ) <u>or</u>	
CUND0003. Cantonese for Mainland students ( <i>for Mainland students only</i> )	

Candidates without a pass in Pure Mathematics at the HKALE must take either MATH0201 or MATH1804 as appropriate.

The remaining credits of junior-level courses should include the UG3 requirement courses and other junior-level courses offered by departments in the Faculties of Arts or Social Sciences subject to the permission of the department concerned and of the Programme Director.

Candidates should complete the following courses in or before the fourth semester:-

Science and Technology Studies or Humanities and Social Sciences studies	(3 credits)
Information Technology course or test as stipulated in the syllabuses	(3 credits or 0)

- b. In the third and subsequent semesters, candidates should take a total of not less than 120 credits of courses comprising the following:

#### In the third and fourth semesters

Two out of the following six courses	(12 credits)
LING2003. Semantics: meaning and grammar	
LING2025. Corpus linguistics	
LING2027. Phonology: an introduction to the study of sound systems	
LING2032. Syntactic theory	
LING2041. Language and information technology	
LING2050. Grammatical description	
PSYC0007. Cognitive psychology	(6 credits)
ECEN2902. English for Professional Communication for Social Sciences	(3 credits)

In the third and subsequent semesters

COGN3002. Seminars in cognitive science	(6 credits)
CSIS0270. Artificial intelligence	(6 credits)
LING2053. Language and the brain	(6 credits)
Two out of the following three courses	(12 credits)
PHIL2220. The mind	
PHIL2230. Philosophy and cognitive science	
PHIL2250. Logic, computation, and neural networks	
Two out of the following five courses	(12 credits)
PSYC0008. Advanced cognitive psychology	
PSYC0022. Biological psychology	
PSYC0051. Perception	
PSYC0054. Human neuropsychology	
PSYC0061. Advanced perception	
STAT2311. Computer-aided data analysis	(6 credits)

In the fifth or sixth semester

COGN3001. Thesis in cognitive science	(12 credits)
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All other courses should be selected from the list below, or from any senior-level course offered by departments in the Faculties of Arts or Social Sciences subject to the permission of that department and of the Programme Director. Candidates are expected to stream their courses according to whether their background is in Arts or Science subjects. Advice on this will be given by the Programme Director.

## JUNIOR-LEVEL COURSES

### Language Studies Courses

#### Department of Chinese

##### **CSSC1001. Practical Chinese language course for social sciences students (3 credits)**

This course aims at enhancing students' knowledge and skills in practical Chinese writing in the social sciences. Students will be introduced to simplified Chinese characters, and will be trained to write letters, proposals, reports, press releases and announcements. They will also acquire the skills in making public speeches and presentations. The course involves extensive use of Chinese IT applications. Assessment: 50% coursework, 50% examination.

##### **CUND0002. Practical Chinese language and Hong Kong society (3 credits)**

This course is designed for Mainland students with the dual aim of providing them with an opportunity to acquaint themselves with the essential features of practical Chinese and paving the way for them to arrive at a deeper, broader understanding of the Hong Kong culture. The key topics include the Chinese language and the history of Hong Kong, the spoken Chinese language and the Hong Kong culture, traditional and simplified characters as well as the basic skills and principles in language communication.

**CUND0003. Cantonese for Mainland students (3 credits)**

This course is intended for non-Cantonese speaking Mainland students who may not have prior knowledge of the dialect. It aims to describe the basic characteristics of the Cantonese dialect; to explore the phonetic structures of Cantonese; to sharpen students' basic communication skills in daily life; and to enable students to gain a proper understanding of the culture and people of Hong Kong. Topics to be covered include the Cantonese sound system, the Yale System of Romanization, the phonetic, lexical and syntactic differences and correspondences between Cantonese and Putonghua as well as Hong Kong customs and conventions.

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**English Centre****ECEN1901. Academic English for Social Sciences (3 credits)**

The course introduces students to features of speaking and writing in English in an academic context. Through small group work related to language and disciplinary issues the course develops abilities to produce clear and coherent spoken and written discourse for university study in the social sciences. Assessment: 100% coursework.

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**ECEN2902. English for Professional Communication for Social Sciences (3 credits)**

The course prepares students to communicate effectively and accurately and prepare themselves for workplace situations which entail the use of English. It requires students to investigate an issue relevant to their studies, improve their interview and presentation skills, and write various professional documents.

Assessment: 100% coursework.

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**Core Courses**

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**Department of Computer Science****CSIS1117. Computer programming (6 credits)**

The goal of this course is for students to learn the general principles of programming, including how to design, implement, document, test, and debug programs.

Assessment: 50% coursework, 50% examination.

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**CSIS1119. Introduction to data structures and algorithms (6 credits)**

Arrays, linked lists, trees and graphs; stacks and queues; symbol tables; priority queues, balanced trees; sorting algorithms; complexity analysis.

Assessment: 40% coursework, 60% examination.

Prerequisite: CSIS1117 or ELEC1501 or ENGG1002.

Pre-/Co-requisite: CSIS1122

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**CSIS1122. Computer programming II (6 credit-units) [for intake of 2006 and thereafter]**

This is the second programming course following ENGG1002/CSIS1117. The goal of this course is to strengthen students' programming skills, in particular, on implementing basic data structures and algorithms. Students will also learn various tools for developing programs in the UNIX/Linux environment.

Assessment: 50% coursework; 50% examination.

Prerequisite: CSIS1117 or ELEC1501 or ENGG1002

## Department of Linguistics

### LING1001. Introduction to linguistics (6 credits)

This course is a prerequisite for all courses taught in the department, and a requirement for all students majoring in linguistics. It is an introduction to the basic topics of linguistics: the nature of human language, speech sounds and sound patterns, word formation, sentence structure, and the study of meaning and use.

Students will learn about the general structure that underlies all language as well as the great variety of existing human languages. The course gives plenty of practice in solving problems, analysing languages, including Chinese and English, and dealing with linguistics data.

Assessment: 50% coursework, 50% examination.

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### LING1002. Language.com: language in the contemporary world (3 credits)

The 21<sup>st</sup> century will be the Age of the Internet. What is the Internet all about? Essentially, it is about information and communication. Language is by far the most important means of communication and information exchange amongst human beings. To fully appreciate our own place in the contemporary world and to make the best of the many opportunities presented by new forms of communication, we need to know more about language. This course is an introduction to language: its nature and its relationship with facets of life in the contemporary world.

- Natural Language Processing: Can computers be trained to understand and produce human language?
- Machine Translation: Can computers do translations automatically and accurately?
- Corpus Linguistics: What kinds of language data are available on the Internet? How can they be used to make grammars and dictionaries?
- Chinese Language Computing: How many kinds of Chinese inputting methods are there? Which one suits you best?
- Internet Tools: What tools are available on the Internet for the learning of languages and linguistics?
- Human-Computer Interfaces: What is “ergonomics”? What is currently being done to improve the quality of communication between people and their computers?
- Speech analysis: What computer programs are available to analyse speech signals? How can computer speech analysis help language learners?

Assessment: 100% coursework.

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### LING1003. Language, Thought, and Culture (6 credits)

This course offers a survey of the study of language, with a focus on the relationship between language structure on the one hand and thought and culture on the other. It is designed as a complementary course to LING1001 ‘Introduction to Linguistics’, and covers topics which cannot be dealt with in the other course due to the limitation of time. Through reading and participation in regular discussions on a selection of topics, students will gain a deeper understanding of the ways in which language is structured, learned, processed and used.

Assessment: 50% coursework; 50% examination.

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## Department of Mathematics

### MATH0201. Basic calculus (6 credits)

Aim/Follow-up: To provide students with a basic background of calculus that can be applied in various disciplines, aiming at students not having done much mathematics beyond HKCEE mathematics. It can be followed by MATH1804 (University Mathematics A). Students with good grades in this course can

also consider taking MATH1805 (University Mathematics B) or MATH1211 (Multivariable Calculus) as follow up.

- Contents:
- Sets, real numbers.
  - Equations and inequalities.
  - Functions, graphs and inverses.
  - Exponential and logarithmic functions.
  - Limits and continuity.
  - Differentiation, chain rule, implicit differentiation.
  - Higher order derivatives, curve sketching, maxima and minima.
  - Definite and indefinite integrals, change of variables.

Examination: One 2½ hour written paper.

Assessment: 50% coursework, 50% examination.

Prerequisite: HKCEE Mathematics. Students with HKCEE Additional Mathematics or AS Mathematics and Statistics or equivalent or mathematics at a higher level are not allowed to take this course.

### **MATH1804. University Mathematics A (6 credits)**

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

- Contents:
- Sets and functions.
  - Limits and continuity.
  - Differentiation, application, Taylor approximation.
  - Integration, techniques, improper integrals.
  - Functions of several variables, partial differentiation.
  - Maxima and minima, Lagrange multipliers.
  - Double integrals.
  - Matrices, systems of linear equations, inverses, determinants.
  - Eigenvalues and eigenvectors.

Examination: One 2½ hour written paper.

Assessment: 50% coursework, 50% examination.

Prerequisite: HKCEE Additional Mathematics or AS Mathematics and Statistics or MATH0201. Students with AL Pure Mathematics or equivalent, or taking or having passed MATH1805 or MATH1211, are not allowed to take this course.

### **Department of Philosophy**

The final grade of courses offered by the Department will be determined by coursework assessment only which may include in-class tests.

### **PHIL1002. The human mind: an introduction to philosophy (6 credits)**

This course is an introduction to philosophical issues about the mind. These include metaphysical questions about what minds are, whether the mind is something non-physical or whether it is some kind of a computer. Then there are the epistemological questions about the limitation of human knowledge, such as whether we can really know what other people's experiences are like, or whether there is a God.



## Department of Psychology

### **PSYC1001. Introduction to psychology (6 credits)**

Discussion of basic concepts in psychology and a preliminary survey of representative work carried out in various areas of psychological investigation, together with an investigation at some length of one such area.

Assessment: 40% coursework, 60% examination.

Eligibility: Students taking or having taken PSYC1002 or PSYC1003 are not allowed to take this course.

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## Department of Statistics & Actuarial Science

### **STAT0301 (old code STAT1001). Elementary statistical methods (6 credits)**

Research findings are often fully or partly supported by data. Data, which are often concerned with situations involving variability and uncertainty, are collected from an experiment or a survey. They are used to estimate the true value of a certain quantity or to test the acceptability of a certain new hypothesis. Valid methods of analysing the data are thus essential to any successful investigation. The course presents the fundamentals of statistical methods widely used by researchers. There is no demand of sophisticated technical mathematics. Topics include: Presentation of data, Variability and Uncertainty, Measures of Central Tendency, Measures of Dispersion, Basic Probability Laws, Binomial Distribution, Poisson Distribution, Normal Distribution, Random Sampling, Sampling Distribution of the Mean, Central Limit Theorem, Point Estimation, Confidence Interval, Sample Size Determination, Hypothesis Testing, Inferences for Mean and Proportion, Simple Linear Regression and Correlation.

Assessment: 25% coursework, 75% examination.

Examination: One 2-hour written paper.

Prerequisites: HKCEE Mathematics. Not available to students with a pass in A-level Pure Mathematics. (Students taking or having taken STAT1301 or STAT1306 or STAT0302 or STAT1000 or STAT1003 or STAT1006 or STAT1007 or STAT1008 or STAT1801 or STAT0601 or STAT0602 are not allowed to take this course.)

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### **STAT1301. Probability & statistics I (6 credits)**

The discipline of statistics is concerned with situations in which uncertainty and variability play an essential role and forms an important descriptive and analytical tool in many practical problems. Against a background of motivating problems this course develops relevant probability models for the description of such uncertainty and variability and provides an introduction to the concepts, principles and methodology of statistical analysis. Topics include: Counting; selection with or without replacement; probability model; conditional probability; Bayes' Theorem; random variables; distribution functions; densities; examples of distributions; joint distributions; independence of random variables and of events; expectation; variance; covariance; correlation coefficient; moments; conditional distributions; conditional expectation; transformation of random variables; bivariate normal distributions; simple inference based on normal samples: one-sample and two-sample problems, hypothesis tests and confidence intervals for means and variances.

Assessment: 25% coursework, 75% examination.

Examination: One 2-hour written paper.

Prerequisites: A-level Pure Mathematics or AS-level Mathematics & Statistics or equivalent. (Students taking or having taken STAT0301 or STAT0302 or STAT1306 or STAT1001 or STAT1003 or STAT1006 or STAT1007 or STAT1008 or STAT1801 or STAT0601 or STAT0602 are not allowed to take this course.)

**STAT1306. Introductory Statistics (6 credits)**

The discipline of statistics is concerned with situations involving uncertainty and variability. The interpretation of data needs special techniques when variability plays a role, as it usually does. Thus statistics forms an important descriptive and analytical tool of many scientific disciplines. Candidates with a mathematical background will find this course suitable, because the language of mathematics allows the subject of statistics to be presented with economy and clarity. Topics include: Presentation of data, Variability and Uncertainty, Measures of Central Tendency, Measures of Dispersion, Basic Probability Theory and Techniques, Random Variables and Probability Distributions, Random Samples, Point Estimation, Normal Sampling Theorem, Confidence Intervals, Hypotheses Testing, Simple Linear Regression and Correlation.

Assessment: 25% coursework and 75% examination.

Prerequisite: A-level Pure Mathematics or AS-level Mathematics & Statistics or MATH0801 or MATH0802. Students without these qualifications, but with grade C or better in A-level Physics, are deemed to have sufficient mathematical training to enrol in this course. Students who intend to major in "Risk Management" or "Statistics" should take STAT1301 instead of this course. (Students taking or having taken STAT1301 or STAT0301 or STAT0302 or STAT1801 are not allowed to take this course.)

**All Departments****COGN1001. Introduction to cognitive science (6 credits)**

This course allows students to gain an understanding of the workings of the mind in the context of the technological advances that are increasingly shaping our lives and our society. The course introduces students to the domain, goals and methods of Cognitive Science, showing how different disciplines converge in their enquiry into how the brain works. With integration as the overall objective, there will be a series of lectures given by specialists within each of the major disciplines (Computer Science and Information Systems, Linguistics, Philosophy, Physiology and Psychology) that contribute to Cognitive Science. Each series of lectures will present case studies highlighting research findings which show how similar questions about the functioning of the human mind are answered from the perspective of each contributing discipline.

Assessment: 100% coursework.

**Faculty of Social Sciences****FOSS1002. Appreciating social research (6 credits)**

Social science researchers investigate social phenomena from different perspectives using different research methodologies. This course will provide a chance for students to take a close look at social science research, and attain a general understanding of the different research orientations taken by social sciences researchers. After taking the course, students will be more knowledgeable and equipped to understand general research findings in social sciences. Emphasis will be on nurturing critical thinking skills and aptitudes for appreciating research evidences encountered in future studies and daily experiences.

Assessment: 100% coursework.

**FOSS1003. Masters in social thought (6 credits)**

Over time, outstanding master thinkers in different social scientific disciplines have produced landmark studies and ingenious conceptual frameworks to illuminate the world we live in. This course introduces students to the works and ideas of selected 'masters' in social sciences, in particular how they continue to enlighten us, by applying their insights to examine the pressing social issues that surround us in the intricately globalized world of today. The basis for our enquiries will be from the works of writers as

diverse as Sigmund Freud, Erich Fromm, J.S. Mill, Emile Durkheim, and Karl Marx amongst others.

1. After taking the course, students will learn the ways of thinking and major insights of selected masters of social sciences.
2. Students will also be able to make use of their insights to reflect on some of the major issues they face in life.

Assessment: 100% coursework.

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## SENIOR-LEVEL COURSES

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### School of Business

#### **BUSI0059. Information systems analysis and design (6 credits)**

This course examines the application of information technology to business and analyses the various stages of a systems life cycle with the development of computer-based information systems. Techniques for modeling data and process requirements will be discussed.

Prerequisite: BUSI1003 or CSIS1127

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### Department of Computer Science

#### **CSIS0250. Design and analysis of algorithms (6 credits)**

The course studies various algorithm design techniques, such as divide and conquer, and dynamic programming. These techniques are applied to design highly non-trivial algorithms from various areas of computer science. Topics include: advanced data structures; graph algorithms; searching algorithms; geometric algorithms; overview of NP-complete problems.

Assessment: 50% coursework, 50% examination.

Pre/Co-requisite: CSIS1119 or ELEC1501 or ELEC1502.

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#### **CSIS0270. Artificial intelligence (6 credits)**

This is an introduction course on the subject of artificial intelligence. Topics include: intelligent agents; search techniques for problem solving; knowledge representation; logical inference; reasoning under uncertainty; statistical models and machine learning. This course may not be taken with BUSI0088.

Assessment: 50% coursework, 50% examination.

Prerequisite: CSIS1119 or CSIS1122.

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#### **CSIS0271. Computer graphics (6 credits)**

Overview of graphics hardware, basic drawing algorithms, 2-D transformations, windowing and clipping, interactive input devices, curves and surfaces, 3-D transformations and viewing, hidden-surface and hidden-line removal, shading and colour models, modelling, illumination models, image synthesis, computer animation.

Assessment: 50% coursework; 50% examination.

Prerequisite: CSIS1119 or CSIS1122

**CSIS0278. Introduction to database management systems (6 credits)**

This course studies the principles, design, administration, and implementation of database management systems. Topics include entity-relationship model, relational model, relational algebra and calculus, database design and normalization, database query languages, indexing schemes, integrity, concurrency control, and query processing. This course may not be taken with BUSI0052.

Assessment: 50% coursework, 50% examination.

Prerequisites: CSIS1119 or ELEC1501 or ELEC1502.

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**CSIS0293. Introduction to theory of computation (6 credit-units)**

This course focuses on three traditional areas of the theory of computation: automata, computability and complexity. Topics include finite state automata and regular languages; pushdown automata and context free languages; Turing machines and random access machines; time complexity; space complexity; intractable problems; reduction and completeness; relationship among complexity classes; approximation algorithms and nonapproximability.

Assessment: 50% coursework, 50% examination.

Prerequisite: CSIS1119.

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**CSIS0297. Introduction to software engineering (6 credits)**

This course introduces the fundamental principles and methodologies of software engineering. It covers the software process and methods and tools employed in the development of modern systems. The use of CASE tools and the UML are emphasized. The course includes a team-based project in which students apply their new knowledge to a full development lifecycle, including maintenance.

Assessment: 50% coursework, 50% examination.

Pre-requisite: CSIS1117 or CSIS0396 or ELEC1501 (for intake of 2005 or before).

Pre-requisite: CSIS1122 (for intake of 2006 and thereafter) or ENGG1002

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**CSIS0311. Legal aspects of computing (6 credits)**

To introduce students to the laws affecting computing and the legal issues arising from the technology. Contents include: the legal system of Hong Kong; copyright protection for computer programs and databases; intellectual property issues on the Internet; patent protection for computer-related inventions; computer-related crime.

Assessment: 30% coursework; 70% examination.

This course may not be taken with LLAW3065.

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**CSIS0315. Multimedia computing and applications (6 credit-units)**

This course introduces various aspects of the interdisciplinary and multidisciplinary field of multimedia computing. Current developments of technologies and techniques in multimedia will also be covered. Applications of multimedia techniques are also highlighted through a media production course project. Major topics include: what are media, audio, acoustics and psychoacoustics, MIDI, basic compression techniques, video compression techniques, standards, and current multimedia technologies. This course may not be taken with BUSI0068.

Assessment: 50% coursework; 50% examination.

Prerequisite: CSIS1119

**CSIS0317. Computer vision (6 credits)**

This course introduces the principles, mathematical models and applications of computer vision. Topics include: image processing techniques, feature extraction techniques, imaging models and camera calibration techniques, stereo vision, and motion analysis.

Assessment: 50% coursework, 50% examination.

Prerequisites: CSIS1119 or ELEC1501 or ELEC1502.

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**CSIS0320. Electronic commerce technology (6 credits)**

This course aims to help students to understand the technical and managerial challenges they will face as electronic commerce becomes a new locus of economics activities. Topics include Internet and WWW technology, information security technologies, public-key crypto-systems, public-key infrastructure, electronic payment systems, and electronic commerce activities in different sectors.

Assessment: 40% coursework; 60% examination.

Prerequisite: CSIS0278

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**CSIS0322. Internet and the World Wide Web (6 credits)**

Introduction and history; networks, internetworking, and network protocols; TCP/IP and related protocols; client-server model and programming; distributed applications; Domain Name System; Internet applications: TELNET, mail, FTP, etc.; Internet security; intranet and extranet; virtual private networks; World Wide Web; Web addressing; HTTP; HTML, XML, style sheets, etc.; programming the Web: CGI, Java, JavaScript, etc.; Web servers; Web security; Web searching; push technology; other topics of current interest. This course may not be taken with BUSI0063.

Assessment: 40% coursework, 60% examination.

Prerequisite: CSIS1117 or ELEC1501 or ENGG1002.

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**CSIS0396. Object-oriented programming and Java (6 credits)**

Introduction to object-oriented programming; abstract data types and classes; inheritance and polymorphism; object-oriented program design; Java language and its program development environment; user interfaces and GUI programming; collection class and iteration protocol; program documentation.

Assessment: 50% coursework; 50% examination.

Pre-requisite: CSIS1117 or ELEC1501 or ENGG1002.

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**Department of Linguistics****LING2002. Conversation analysis (6 credits)**

How is it that we manage to have conversations in which lots of different people take part and everyone has a chance to speak as well as to listen? At least, most of the time we manage that all right. What rules are followed when we have conversations? On this course you will discover what these rules are and learn how to describe the structure of conversations.

Assessment: 100% coursework.

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**LING2003. Semantics: meaning and grammar (6 credits)**

This course focuses on structural and cognitive aspects of meaning which are relevant to the description and theory of grammar. Examples will be drawn from Cantonese, Mandarin and English together with some other European and Asian languages.

Assessment: 100% coursework.

**LING2025. Corpus linguistics (6 credits)**

An introduction to Corpus linguistics. Topics include: the use of corpora in linguistic analysis, methods in the design and collection of spoken and written texts, uses of corpora. Topics are discussed with reference to various languages.

Assessment: 100% coursework.

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**LING2027. Phonology: an introduction to the study of sound systems (6 credits)**

The notion of the phoneme and its place in phonology; distinctive features; phonological processes and their description; rules and representations.

Assessment: 100% coursework.

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**LING2031. Phonological theory (6 credits)**

Current theories of phonology, including Autosegmental phonology, Metrical theory, Lexical phonology, Optimality theory and other models.

Assessment: 100% coursework.

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**LING2032. Syntactic theory (6 credits)**

The course explores recent theoretical approaches to syntax, focusing on generative grammar.

Assessment: 100% coursework.

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**LING2041. Language and information technology (6 credits)**

This course continues with major themes from **LING1002. Language.com** and aims to create a greater awareness of the growing importance of language information processing methods. The objective of the course is to explore the interface between language, linguistics, and information technology.

Assessment: 100% coursework.

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**LING2050. Grammatical description (6 credits)**

This course aims at giving the students a comprehensive introduction to basic concepts used in the description of morphology and syntax, independent of any model of grammar. Exercises accompany the topics introduced. Example analyses are drawn from various languages. The following topics in morphology and syntax will be covered: words, morphemes and morphs, word classes, immediate constituents, phrase structure, functional relations, sentence structure.

Assessment: 100% coursework.

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**LING2053. Language and the brain (6 credits)**

This course is an introduction to the representation and processing of language in the human brain, the systems and processes that enables us to speak, understand speech, learn languages, and read and write. Through attending the course, students will acquire in-depth knowledge of how language is developed, processed, and organized in the brain. Traditional as well as most recent research from linguistics, cognitive neuroscience (e.g. brain imaging) and the study of language disorders will be reviewed.

Assessment: 100% coursework.

## Department of Philosophy

The final grade of courses offered by the Department will be determined by coursework assessment only which may include in-class tests.

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### **PHIL2220. The mind (6 credits)**

The human mind is the nexus of a number of great mysteries. What is the nature of self? Is the mind identical to the brain, or is it an immaterial substance? Is Artificial Intelligence possible, and can computers experience emotions and other feelings? Are our actions free, or are they determined by our genes and upbringing? We shall be exploring some of these issues and other related topics in this course.

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### **PHIL2230. Philosophy and cognitive science (6 credits)**

We shall look at some of the philosophical issues involved in studying minds and behaviour scientifically. We might discuss questions such as: Can we explain all mental phenomena in computational terms? What is consciousness? What is the role of language in thinking? How useful are neural networks in understanding the mind?

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### **PHIL2250. Logic, computation, and neural networks (6 credits)**

This course is about the relationship between logic and computation. Basic results about decidability and computability will be discussed. The course might also include a component on neural networks. Students will learn how to carry out neural network simulations and analysis. The course is particularly suitable for students who are interested in AI, psychology and cognitive science.

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### **PHIL2510. Logic (6 credits)**

This is an introduction to formal logic. We will review sentential and predicate logic. We will discuss theorems about formal systems of logic, including soundness and completeness. Time permitting, we will discuss advanced topics such as Gödel's incompleteness theorems, computability, Tarski's theorem, or modal logic. Students are expected to know some elementary formal logic before enrolling in this course. In preparation, students can take PHIL1005, or PHIL1006, or else students can study the online material on logic produced by the Department. For further details, please contact the Department.

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### **PHIL2610. Philosophy of language (6 credits)**

What is a language, and what is involved in knowing or understanding a language? In this course we will see how philosophers and linguists answer such questions as the following: What can logic tell us about the grammar of natural languages? Are human beings born with a universal grammar? What makes a word meaningful? What is the difference between what we mean and what we convey when we say something? How does a metaphor work? Can we learn something from slips of the tongue about the nature of language?

**Department of Psychology****PSYC0007. Cognitive psychology (6 credits)**

This course covers how humans learn to deal with information from the environment. Topics include various aspects of perception, memory, concept structure and learning, and thinking. Students will be involved in conducting experiments on cognitive functioning as part of the coursework.

Assessment: 100% coursework.

Prerequisite: either PSYC1001 or PSYC1002; and PSYC1004. (BCogSc students exempt from PSYC1004).

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**PSYC0008. Advanced cognitive psychology (6 credits)**

This course covers some recent approaches in the field of cognitive psychology. Topics may include the cognitive unconscious in perception and memory, conditioning versus cognitive learning in humans, neural networks and information processing, as well as other topics reflecting the interests of the teacher. Students will each do an independent empirical research project. Priority will be given to UG students major in psychology.

Assessment: 100% coursework.

Prerequisites: PSYC1004 and PSYC0007. (BCogSc students exempt from PSYC1004).

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**PSYC0022. Biological psychology (6 credits)**

This course provides an introduction to biological aspects of behaviour. The topics include: biological bases of behaviour, development, learning, memory, and abnormal psychology; the nervous system; processes of brain maturation; psychophysiology.

Assessment: 100% coursework.

Prerequisite: PSYC1001 or PSYC1002.

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**PSYC0051. Perception (6 credits)**

An introduction to sensation and perception, with an emphasis on the psychology of seeing. Specific topics include the following: examination of the functional properties of sensory systems (e.g., auditory system, color vision, vestibular system, touch and kinaesthesia); phenomenology of sensation and perception; psychophysical limits of perceptual systems; goals of sensory coding; structure and evolution of sensory systems; theories of perception. Perceptual experiments will be conducted by students in laboratory classes.

Assessment: 100% coursework.

Prerequisite: either PSYC1001 or PSYC1002.

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**PSYC0054. Human neuropsychology (6 credits)**

This course introduces to you the basic principles of *Neuropsychology*. The objectives of the course are: (1) to introduce basic concepts of neurophysiology and functional neuroanatomy, (2) to review models describing different cognitive functions discussed in this course, and (3) to introduce the concept of brain-behavior connection via reviewing the neuro-anatomical and neuropsychological mechanisms underlying some common brain disorders. Students will each do an independent empirical research project. Priority will be given to UG students major in psychology.

Assessment: 100% coursework.

Prerequisites: PSYC1004 and PSYC0022. (BCogSc students exempt from PSYC1004)



**PSYC0061. Advanced issues in perception (6 credits)**

An advanced course that explores findings from both recent and classical research on human perceptual systems. Specific attention will be given to – though not limited to – computational models, psychophysical findings, neurobiological findings. Students will each do an independent empirical research project. Priority will be given to UG students major in psychology.

Assessment: 100% coursework.

Prerequisites: PSYC1004 and PSYC0051; or with permission of the instructor. (BCogSc students exempt from PSYC1004).

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**Department of Sociology****SOCI0042. Social research methods (6 credits)**

The aims of this course are to introduce the basic principles and procedures which form the foundation of social research, to review the main types of research designs and methods of data collection used in social research, and to provide a set of criteria for analysing and evaluating the products of social research. The types of research covered will include participant observation, experimental design, survey methods and documentary analysis. Ethical and political issues in social research will also be discussed.

Assessment: 60% coursework, 40% examination.

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**Department of Statistics and Actuarial Science****STAT2311 (old code STAT0401). Computer-aided data analysis (6 credits)**

A wide range of statistical analyses and methods are presented using data sets generated from social sciences research and scientific studies. These analyses deal with designed experiments in the laboratory or field-work setting together with data from less-rigorously planned observational studies. Measuring uncertainty, describing patterns of variability, and describing the inter-relationship between several variables are therefore essential aspects of social science and scientific investigations. These aspects require a good understanding of statistics. This computer-oriented but non-mathematical course develops the important concepts and methods of statistics. Although no knowledge of a programming language is required, the course makes extensive use of computers. This is made possible by high-quality, but user friendly statistical software like JMP or SPSS. Topics include: Data exploration, formulation of testable hypotheses, the evaluation of evidence and forecasting on the basis of past experience.

Assessment: 40% coursework, 60% examination.

Examination: One 2-hour written paper.

Prerequisites: STAT1306 or STAT0301 or STAT0302 or ECON1003 or ECOL2006 or STAT1001 or STAT1003 or STAT1006 or STAT1008 or STAT2001 or STAT0602 or (CogSc students having taken STAT1000 or STAT1301). (Students taking or having taken STAT0603 are not allowed to take this course.)

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**All departments****COGN3001. Thesis in cognitive science (12 credits)**

This course comprises an independent research study or dissertation in an area of cognitive science of the candidates' choice, subject to availability of supervision.

Assessment: 100% coursework.

**COGN3002. Seminars in cognitive science (6 credits)**

This course is a tutorial-based reading course in specialist areas of cognitive science research and interest. It will include presentations and group discussion of research and issues of interest within cognitive science, providing an opportunity for students to examine critically the cognitive science approach to understanding intelligent systems.

Assessment: 100% coursework.

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**Faculty of Social Sciences****FOSS1004. Internship workshop (0 credit)**

Before undertaking an internship with a community partner, students will be required to participate actively in one day intensive workshops. These workshops will introduce students to the aims, expectations and key issues related to internships. In the workshops, students will have opportunities to interact with speakers in critically reflecting upon how to become successful interns. More specifically, students will be engaged in exploring the core skills and essential knowledge necessary for successful completion of internships.

Assessment: 100% attendance.

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**FOSS0018. Social Innovation internship (12 credits)**

To fulfill the graduation requirement under the theme of 'Social Innovation', students will begin their local or non-local internships after completing the intensive training workshops. They will be placed in local/international NGOs or other socially-focused public/private organisations during term time or the summer. They will be supervised and assessed by both an academic tutor and a workplace supervisor.

Social Innovation Internships seek to enhance students' understanding of social issues through first-hand practical experience, and through applying knowledge and skills to real life situations. Students are expected to be socially aware and to have strong analytical, interpersonal and communication skills. On completion of the internship, students are required to give a project presentation to reflect on their work-related experiences, and in particular to demonstrate how they integrate academic theories with their work-related experiences. To complete the internship, students must write an extensive report critically reflecting on theories learned in class and analysing empirical findings and work experience gained from the internship.

Assessment: 100% coursework.

Prerequisite: FOSS1004 Internship workshop

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**FOSS0019. Global Citizenship internship (12 credits)**

In order to fulfill the graduation requirement under the theme of 'Global Citizenship', students are expected to develop strong analytical abilities in solving complex problems by undertaking non-local internships. For students taking non-local internships, they will begin their internships after completion of the intensive internship workshops. They will be placed in international NGOs or other socially-focused public/private organisations during term time or the summer. Through the participation in the non-local internships, students are expected to engage in working closely with international organizations, identifying key issues and developing strategies to enhance social development and promote social innovation. They are expected to conduct critical analysis of social issues, and to propose strategies to address the problems identified in their community organizations. They will be supervised and assessed by both an academic tutor and a workplace supervisor.

On completion of the internship, students are required to give a project presentation to reflect on their work-related experiences, and in particular to demonstrate how they integrate academic theories with their work-related experiences. To complete the internship, students must write an extensive report critically reflecting on theories learned in class and analysing empirical findings and work experience gained from the internship.

Assessment: 100% coursework.

Prerequisite: FOSS1004 Internship workshop