City University of Hong Kong
Course Syllabus

offered by Department of Linguistics and Translation
with effect from Semester A 2017 / 18

Part I Course Overview

Course Title:	Computational Linguistics
Course Code:	LT5411
Course Duration:	One Semester
Credit Units:	3
Level:	P5
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	Nil
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	CTL5411 Computational Linguistics
Exclusive Courses: *(Course Code and Title)*	Nil

Part II Course Details

1. Abstract

This course aims at introducing students with various academic backgrounds to the quantitative aspects of language and the basic concepts of the application of computational techniques in language processing. The course will cover topics selected from a wide range of issues and challenges of the field, including but not limited to multilingual computing, using computers in linguistic studies, natural language processing, and the use of large corpora in natural language applications. This course will also provide students with a foundation for further research in relevant areas.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOsCILOs	Weighting (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick ✓ where appropriate)		
			A1	*A2*	*A3*
1.	Identify key computational linguistic concepts and issues in major areas of study in the field.	30%	✓	✓	✓
2.	Explain the theoretical basis underlying major computational approaches to handling these issues, with particular reference to English and Chinese.	40%	✓	✓	✓
3.	Review the development of one or more major area of research in computational linguistics, and devise innovative solutions to the critical issues.	30%	✓	✓	✓
		100%			

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: *Accomplishments*
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.						Hours/week (if applicable)
		1	2	3				
1	**Lectures** to explain the major issues and concepts in computational linguistics and introduce different approaches to their solution. Interaction between instructor and students is expected.	✓	✓					2 hours
2	**Instructor-facilitated tutorial discussions** on the theories and algorithms, and/or hands-on practical exercises involving the use of computational tools for various language processing tasks, to reinforce the concepts covered in lectures.	✓	✓					1 hour
3	**Independent studies** on a selected topic in a major area of research in computational linguistics	✓	✓	✓				
4	**Class presentation** on a selected topic in a major area of research in computational linguistics to encourage peer learning, with comments from instructor.	✓	✓	✓				

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.						Weighting	Remarks
	1	2	3					
Continuous Assessment: 100%								
Class presentation on a selected topic in a major area of research in computational linguistics to encourage peer learning, with comments from instructor.	✓	✓					30%	
Quiz(zes) on concepts and issues in computational linguistics, and theoretical basis underlying some computational approaches to their solutions	✓	✓					30%	
- **Independent studies** on a selected topic in a major area of research in computational linguistics - **Term essay** and class presentation (3,000 – 4,000 words and 15 minutes for presentation)	✓	✓	✓				40%	
Examination: % (duration: , if applicable)								
							100%	

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Class presentation	Ability to demonstrate competence in a major area of research in computational linguistics	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Quiz(zes)	Ability to demonstrate competence in concepts and issues in computational linguistics	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. - Independent studies - Term essay	Ability to perform independent research on a selected topic in computational linguistics	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

Natural language processing: Tokenisation, Morphological analysis, Part-of-speech tagging, Context-free rules, Parsing, Semantic representation, Disambiguation, Rule-based methods, Corpus-based methods, Statistical methods

Linguistic computing: Frequency counts, Quantitative methods in linguistic studies, Linguistic corpora, Text markup, Corpus annotation, Concordance

Natural language applications: Machine translation, Information retrieval, Information extraction, Natural language generation

Multilingual computing: Character encoding, Input and display, Internationalization and localization

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

1.	Manning, C.D. and Schutze, H. (1999) Foundations of Statistical Natural Language Processing. Cambridge, MA: The MIT Press.
2.	Jurafsky, D. and Martin, J.H. (2009) Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition (2nd Edition). Upper Saddle River, NJ: Pearson Prentice Hall.
3.	Allen, J. (1995) Natural Language Understanding. Redwood City, CA: Benjamin/Cummings.

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	Grishman, R. (1986) Computational Linguistics: An Introduction. Cambridge, UK: Cambridge University Press.
2.	Indurkhya, N. and Damerau, F.J. (2010) Handbook of Natural Language Processing. Boca Raton, FL: Chapman & Hall.
3.	McEnery, T. and Wilson, A. (1996) Corpus Linguistics. Edinburgh, UK: Edinburgh University Press.
4.	Mitkov, R. (2003) Oxford Handbook of Computational Linguistics. Oxford: Oxford University Press.
5.	黃昌寧、李涓子 (2002) 《語料庫語言學》 北京：商務印書館
6.	俞士汶 (2003) 《計算語言學概論》 北京：商務印書館
7.	Journal and conference papers at ACL Anthology http://www.aclweb.org/anthology-index/