Subject Code	FH6051
Subject Title	Computational Linguistics
Credit Value	3
Level	6
Pre-requisite / Co- requisite/ Exclusion	N/A
Objectives	This subject aims to achieve the following goals:
	• To introduce students to the field of computational linguistics and its history.
	• To help students understand how linguistic structures can be automatically extracted and analyzed using computational methods.
	• To introduce students the various applications of computational linguistics and the basic technologies for such applications.
	• To provide students with the knowledge of related tools for text analysis and hands-on experience of using such tools.
	• To train students with basic programming skills for computational linguistics applications.
Intended Learning	Upon completion of the subject, students will be able to:
Outcomes	 (a) Understand and appreciate the development of the field of computational linguistics and its significance in modern applications;
	(b) Understand the complicated nature of human language and the challenges facing computational linguists;
	(c) Understand the scientific principles behind the various systems using natural language processing techniques;
	(d) Understand the principles of language resource annotation and information extraction;
	(e) Apply the above principles in analysis of data and acquire intended information through the use of tools;
	(f) Design simple programs for data extraction in different applications.
	(g) Problem solving using systematic ways and learning independently.
Subject Synopsis/ Indicative	Introduction and overviewRegular expressions and state transition diagrams

Syllabus	Programming for text acquisition and search								
	Morphological analysis and processing								
	Segmentation and syntactic analysis								
	• Semantics representation and analysis								
	• Statistical mode	els in natural	l lang	guage	proc	cessin	ıg		
	• Acquisition of l	language kno	owle	dge tl	nroug	gh the	use o	of cor	pus
	• Annotation of la	anguage reso	ource	es					
	• Applications information r translation	using con etrieval, inf	nputa	tiona ation	l li extr	inguis actio	stics n an	sucl d ma	n as Ichine
Teaching/Learning Methodology	This subject will be taught in a combination of lectures, tutorials and lab sessions. Lectures will cover concepts, algorithms and models with illustrative examples. Tutorials and lab sessions are designed to help students further their understanding of the materials covered in lectures and learn to apply the acquired knowledge to practical use. In addition to the above, students are also expected to complete								
	assignments and lab e.	xercises, and		ena qu	lizze	s and	tests	•	
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						
			a	b	c	d	e	f	g
	1. Lab exercises	30%	~	✓	~	~	~	✓	~
	2. Quizzes and tests	70%	~	~	~	~	~	~	~
	Total	100 %							
	Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:								
	All the above assessment methods are appropriate for evaluating students' understanding of course materials and their programming skills and problem solving skills. Individual assignments provide assessment on a regular basis, which also serve as a means of self- monitoring for students. Lab exercises will emphasize the ability to apply knowledge to real-world problems. Quizzes and tests will assess students' overall understanding of the concepts and algorithms learnt in class and their mastery of basic programming skills.								
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Effort Required	 Lecture 	26 Hrs.					
	 Tutorial/Lab 	13 Hrs.					
	Other student study effort:						
	 Study lecture/text book materials for understanding of concepts 	35 Hrs.					
	 Homework and Programming Assignments, online QA, and preparation for quizzes and tests 	40Hrs.					
	Total student study effort						
Reading List and References	Text Book:Dan Jurafsky and James H. Martin, Speech and Language processing, 2^{nd} Addition, Prentice Hall, 2008						
	 References: Christopher Manning and Hinrich Schuetze, Foundations of Statistical Natural Language Processing, Ruslan Mitkov, The Oxford Handbook of Computational Linguistics, Oxford University Press, 2005. Christopher Manning, Prabhakar Raghavan, and Hinrich Schuetze, Introduction to Information Retrieval, Cambridge University Press, 2008 Steven Bird, ewan Klein, and Edward Loper, Natural Language Processing with Python, O'Reilly Media, 2009 Hopcroft, J.E. and Ullman, J.D., Introduction to Automata, Theory and Languages, Addison-Wesley, 1979. 						