

SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

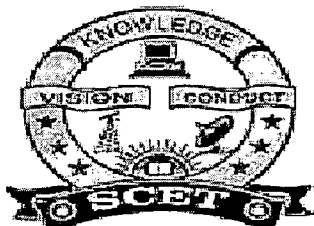
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Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by
NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF INFORMATION TECHNOLOGY

TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods /Week	Academic Year	Date of commencement of Semester
20IT7J02	Natural Language Processing	VII	IT	6	2025-2026	09-06-2025
COURSE OUTCOMES						
1	Rephrase given text with basic Language features (K2)					
2	Build an innovative application using NLP components (K3)					
3	Apply a rule based system to tackle morphology/syntax of a language (K3)					
4	Develop a tag set to be used for statistical processing for real-time applications (K3)					
5	Compare and contrast the use of different statistical approaches for different types of NLP applications. (K2)					
UNIT	OutComes / Bloom's Level	Topics No.	Topics/ Activity	Text Book/ Reference	Contact Hour	Delivery Method
I	CO – 1		UNIT-1: INTRODUCTION			Chalk & Board
		1.1	Origins and challenges of NLP	T2	1	
		1.2	Language Modeling	T2	1	
		1.3	Grammar-based LM	T2	1	
		1.4	Statistical LM	T2	1	Power point presentation
		1.5	Regular Expressions	T2	1	
		1.6	Finite-State Automata	T2,T1	1	
		1.7	English Morphology	T2,T1	1	
		1.8	Transducers for lexicon and rules	T2,T1	1	Assignment
		1.9	Tokenization	T2,T1	1	
		1.10	Detecting and Correcting Spelling Errors	T2,T1	1	
	1.11	Minimum Edit Distance	T2	1	Test	
Content beyond syllabus	1.12	Morphology - Inflectional Morphology - Derivational	T2,T1	1		
Total					12	
II	CO – 2		UNIT-II: WORD LEVEL ANALYSIS			Chalk & Board
		2.1	Unsmoothed N-grams	T1	1	
		2.2	Evaluating N-grams	T1	1	
		2.3	Smoothing	T1	1	Power point presentation
		2.4	Interpolation and Backoff	T1	1	
		2.5	Word Classes	T1	1	
		2.6	Part-of-Speech Tagging	T1	1	
	2.7	Rule-based	T1	1	ion	



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		2.8	Stochastic and Transformation-based tagging	T1	1	Assignment Test
		2.9	Issues in PoS tagging	T1	1	
		2.10	Hidden Markov and Maximum Entropy models	T1	1	
Content beyond syllabus		2.11	Unsmoothed N-grams	T1	1	
Total					11	
III	CO -3		UNIT-III: SYNTACTIC ANALYSIS			Chalk & Board
		3.1	Context-Free Grammars	T1,R1	1	
		3.2	Grammar rules for English	T1	1	
		3.3	Treebanks	T1,R1	1	
		3.4	Normal Forms for grammar	T1,R1	1	Power point presentation
		3.5	Dependency Grammar	T1,T2	1	
		3.6	Syntactic Parsing	T1,T2	1	
		3.7	Ambiguity	T1,T2	1	
		3.8	Dynamic Programming parsing	T2	1	Assignment
		3.9	Shallow parsing	T2	1	
		3.10	Probabilistic CFG	T1	1	
		3.11	Probabilistic CYK	T1	1	
		3.12	Probabilistic Lexicalized CFGs	T1	1	Test
		3.13	Feature structures	T1,R1	1	
		3.14	Unification of feature structures	T1,R1	1	
Content beyond syllabus		3.15	Transformation-Based Tagging		1	
Total					15	
IV	CO – 4		UNIT-IV:SEMANTICS AND PRAGMATICS			Chalk & Board
		4.1	Requirements for representation	T1	1	
		4.2	First-Order Logic	T1	1	
		4.3	Description Logics	T1	1	
		4.4	Syntax-Driven Semantic analysis	T1	1	Power point presentation
		4.5	Semantic attachments	T1	1	
		4.6	Word Senses	T1,R1	1	
		4.7	Relations between Senses	T1	1	
		4.8	Thematic Roles	T1	1	Assignment
		4.9	selectional restrictions	T1,R1	1	
		4.10	Word Sense Disambiguation	T1	1	
		4.11	WSD using Supervised	T1	1	
		4.12	Dictionary & Thesaurus	T1	1	Test
		4.13	Bootstrapping methods	T1,R3	1	
		4.14	Word Similarity using Thesaurus and Distributional methods	T1	1	
Content beyond syllabus		4.15	Information Retrieval	T1,R3	1	
Total					15	



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V	CO – 5		UNIT-V: DISCOURSE ANALYSIS AND LEXICAL RESOURCES			Chalk & Board
		5.1	Discourse segmentation	T1,R1	1	
		5.2	Coherence	T1,R1	1	
		5.3	Reference Phenomena	T1,R1	1	Power point presentation
		5.4	Anaphora Resolution using Hobbs and Centering Algorithm	T1,R1	1	
		5.5	Coreference Resolution	T1,R1	1	
		5.6	Resources, Porter Stemmer	T1,R1	1	
		5.7	Lemmatizer	T1,R2	1	Assignment
		5.8	Penn Treebank, Brill's Tagger	T1,R1	1	
		5.9	WordNet, PropBank	T1	1	
		5.10	FrameNet, Brown Corpus	T1	1	Test
5.11	British National Corpus (BNC)	T1	1			
Content beyond syllabus		5.12	Transfer Metaphor	T1,R1	1	
Total					12	
CUMULATIVE PROPOSED PERIODS					65	
Text Books						
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1	Daniel Jurafsky, James H. Martin—Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics and Speech Recognition with Language Models, 3 rd edition, Pearson Publication, 2025.					
2	Steven Bird, Ewan Klein and Edward Loper, —Natural Language Processing with Pythonl, First Edition, O_Reilly Media, 2019.					
Reference Books						
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1	Breck Baldwin, —Language Processing with Java and LingPipe Cookbook, Atlantic Publisher, 2015.					
2	Richard M Reese, —Natural Language Processing with Javal, O_Reilly Media, 2015					
3	Nitin Indurkhya and Fred J. Damerau, —Handbook of Natural Language Processing, Second Edition, Chapman and Hall/CRC Press, 2010					
4	Tanveer Siddiqui, U.S. Tiwary, —Natural Language Processing and Information Retrieval, Oxford University Press, 2008.					
Web Details						
1	https://ocw.mit.edu/courses/6-864-advanced-natural-language-processing-fall-2005/pages/lecture-notes/					
2	https://mrcet.com/downloads/digital_notes/CSE/III%20Year/CS/Natural%20Language%20Processing-1.pdf					
			Name	Signature with Date		
i.	Faculty		Mr. K.Raja			
ii.	Module Coordinator		Mr. K.Raja			
iii.	Programme Coordinator		Dr.RVVS Prasad			

Principal