

SOCIETY OF ST. FRANCIS XAVIER, PILAR'S
FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING
(Approved by AICTE & Affiliated to University of Mumbai)

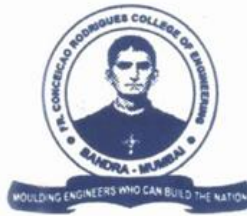
Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.

Phone : (022) 6711 4000, 6711 4101, 6711 4104

Website : www.frcce.ac.in • Email : crce@fragnel.edu.in

Department of Computer Engineering (Academic Year :2023-2024)

Course Code: CSDC7013	
Course Name: Natural Language Processing	
Course Teacher: Dr. Vijay Shelake	
Course Outcomes (CO): <i>At the End of the course students will be able to</i>	
CO.1	Describe the linguistic preliminaries necessary for various phases in NLP.
CO.2	Perform Word-Level and Syntax-Level analysis on a text.
CO.3	Analyze the textual input at Semantic Level in NLP.
CO.4	Develop a basic understanding of Pragmatics in NLP
CO.5	Apply NLP techniques to design real-world NLP applications



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Course Lesson Plan

Sr. No.	Proposed Date	Actual Date	Topics	CO	Teachers Remark	HOD's Remark
1	11/7		Subject Introduction, Syllabus, Course outcome Introduction: History of NLP.	CO1		
2	12/7		Generic NLP system, Levels of NLP, Knowledge in language processing, Ambiguity in Natural language,	CO1		
3	13/7		Stages in NLP, Challenges of NLP, Applications of NLP	CO1		
	17/7				Quiz-1on CO1	
4	18/7		Word Level Analysis: Morphology analysis, survey of English Morphology	CO2		
	19/7		Inflectional morphology, Derivational morphology			
5	20/7		Stemming and Lemmatization	CO2		
6	25/7		Regular expression and finite automata	CO2		
7	26/7		finite state transducers (FST) Morphological parsing with FST	CO2		
8	28/7		Numerical on N-gram model, Evaluating N-grams: Perplexity	CO2		
9	1/8		Edit Distance Model for spelling correction	CO2		
10	2/8		Noisy Channel Model for spelling correction	CO2		
11	4/8		Numerical on Text classification	CO2		
				CO2	Assignment-1-Part A	
12	8/8		Syntax analysis: Part-Of- Speech tagging (POS)- Tag set for English (Penn Treebank)	CO2		
13	9/8		Rule based POS tagging, Stochastic POS tagging	CO2		
14	11/8		Issues Multiple tags & words, Unknown words.	CO2		



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	15-08-23		Independence Day			
	16-08-23		Parsi New Year			
15	18/8		Introduction to CFG, Sequence labelling: HiddenMarkov Model (HMM)	CO2		
16	22/8		Issues in HMM POS tagging; Discriminative Model: Maximum Entropy model, Conditional random Field (CRF)	CO2		
17	23/8		Parsers: Top down and Bottom up; Modelling constituency	CO2		
18	25/8		Revision lecture			
	28/8		Unit Test-1			
	29/8		Unit Test-1			
	30/8		Unit Test-1, Mid-Term Feedback			
19	1/9		Bottom-Up Parser: CYK, PCFG (Probabilistic Context Free Grammar)	CO2		
20	5/9		Shift Reduce Parser; Top-Down Parser: Early Parser, Predictive Parser	CO2		
	6/9			CO2	Assignment-1-Part B	
21	6/9		Semantic Analysis: Lexical Semantics, Study of Various language dictionaries	CO3		
22	8/9		Relations among lexemes & their senses	CO3		
23	9/9		Remedial Session			
24	12/9		Word Sense Disambiguation (WSD); Knowledge based approach (Lesk's Algorithm)	CO3		
25	13/9		Supervised (Naïve Bayes, Decision List)	CO3		
26	15/9		Introduction to Semi-supervised method (Yarowsky) Unsupervised (Hyperlex)	CO3		
	19/8-22/8		Shri Ganesh Festival			
27	26/9		Attachment for fragment of English-sentences,	CO3		
28	27/9		noun phrases, Verb phrases, prepositional phrases	CO3		
29	29/9		Relations among lexemes & their senses Homonymy	CO3		
30	3/10		Polysemy, Synonymy, Hyponymy, WordNet	CO3		
	4/10		Robust Word Sense Disambiguation (WSD), Dictionary	CO3		



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			based approach			
					Assignment 2	
31	6/10		Pragmatics: Discourse reference Resolution Discourse: Reference Resolution, Reference Phenomena,	CO4		
	9/10		Unit Test-2			
	10/10		Unit Test-2			
	11/10		Unit Test-2			
32	13/10		Syntactic & Semantic constraint on coherence;	CO5		
33	17/10		Anaphora Resolution using Hobbs and Canterling Algorithm	CO5		
					Quiz 2 on CO5	
34	18/10		Case study presentation on applications of NLP	CO5		
35	20/10		Case study presentation on applications of NLP	CO5		
36	21/10		Remedial Session and Course Exit Survey	CO5		
			University ESE Examination			

Textbooks:

1. Daniel Jurafsky, James H. and Martin, Speech and Language Processing, Second Edition, Prentice Hall, 2008.
2. Christopher D.Manning and HinrichSchutze, Foundations of Statistical Natural Language Processing, MIT Press, 1999.

References:

1. Siddiqui and Tiwary U.S., Natural Language Processing and Information Retrieval, Oxford University Press, 2008.
2. Daniel M Bikel and ImedZitouni — Multilingual natural language processing applications: from theory to practice, IBM Press, 2013.
3. Alexander Clark, Chris Fox, Shalom Lappin — The Handbook of Computational Linguistics and Natural Language Processing, John Wiley



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and Sons, 2012.

4. Nitin Indurkha and Fred J. Damerau, —Handbook of Natural Language Processing, Second Edition, Chapman and Hall/CRC Press, 2010.
5. Niel J le Roux and SugnetLubbe, A step by step tutorial: An introduction into R application and programming.
6. Steven Bird, Ewan Klein **and** Edward Loper, Natural language processing with Python: analyzing text with the natural language toolkit, O_Reilly Media, 2009.

Digital References :

- 1 <http://www.cse.iitb.ac.in/~cs626-449>
- 2 <http://cse24-iiith.virtual-labs.ac.in/#>
3. <https://nptel.ac.in/courses/10610515>

Course Instructor: Dr. Vijay Shelake