NATURAL LANGUAGE PROCESSING (3-0-0)

Objective:
1. To understand the principles of Natural Language Processing.
2. To be familiar with the Natural Language Processing algorithms and their Implementation.

MODULE – I
NLP tasks in syntax, semantics and pragmatics; Applications such as information extraction, question answering, and machine translation, The problem of ambiguity, The role of machine learning.

MODULE – II
Brief history of the field POS-tagging, POS-tagging perspective, POS tagging and HMM, Hidden Markov models (Forward and Viterbi algorithm and EM training), POS-tag set, Machine translation, Parsing algorithms, Probabilistic parsing, Parser Comparison Grammar, constituency and dependency, CYK algorithm, Parse tree construction, Semantics.

MODULE – III
Word sense disambiguation Knowledge based and supervised WSD, Unsupervised EM based WSD, Multilingual Resource constrained WSD Linear and logistic Regression, Machine translation.

MODULE – IV
Statistical Machine translation, Binding Theory and Merger, X-bar theory.

Outcome:

1. Technical knowhow of the Natural Language Processing for real time applications.

Books Recommended:

1. James Allen, "Natural Language Understanding" .
2. Benjamin/Cummins E. Charniack, "Statistical Language Learning", MIT Press .
3. Daniel Jurafsky and J.H. Martin, "Speech and Language Processing", Prentice Hall.
4. H. Lane, H. Hapke, C. Howard, "Natural language processing in Action: Understanding, analyzing, and generating text with Python", Manning publications.
5. B. Bengfort, R. Bilbro, "Applied Text Analysis with Python: Enabling Language Aware
6. Data Products with Machine Learning", O"Reilly