

MAHATMAGANDHI UNIVERSITY

RESTRUCTURED SYLLABUS PGCSS

SANSKRIT SPECIAL VYAKARANA (2021 ONWARDS)

SEMESTER III

SA050305 -NLP AND SEMANTIC CONCEPTS OF BHARTRUHARI

Contact hrs-90

Credits-3

Aim of the Course:

This course provides a general introduction to Natural Language Processing with a particular emphasis on language models related to Sanskrit and other Indian languages, morphology, parsing, syntax, semantics, information extraction, information retrieval, text processing and Natural Language Tool kit.

Objectives of the Course:

1. Understand the core tasks in NLP
2. Understand and analyze Natural Languages and be familiar with the theoretical frameworks.
3. Appreciate the relationship between linguistic representations and their computational applications.
4. Identify NLP tools and understand the logic behind the tools.
5. Know how to use the different NLP applications.
6. This course aim to impart a good knowledge on the semantic analysis made by the Sanskrit grammarians.
7. To introduce the valuable contributions Bhartrhari on semantics through his great book the Vakyapadiya.

Course Outline:

Module1:

What is NLP, Brief history of the field, Necessity of NLP, Application of NLP, Complexity of NLP, Recent developments in the study of Indian Languages, Language structure and analyzer, Introduction, Morphological analyzer, Local Word Grouper(LWG).

Module II:

Core Parser and requirements of computational Grammars. Morphological generation using paradigms, and issues in analysis and Generation. Paninian parser: Introduction, karaka relations, karaka to vibhakti mapping.

Module III:

The Vakyapadiya of Bhartrhari, Padakanda- Sadhanasamuddesa, Karikas 1-9, 18-32, 44-50, 56-60, 68, 80-84.

Module IV:

Karikas- 101-105, 125-126, 127,128,129,131,136-152, 156-160.

References:-

Module I and II

Bharati, A, Chaitanya, V, Sangal, R and Ramakrishnamacharyulu, K V, 1995. 'Natural language processing: A Paninian Perspective. New Delhi, Prentice- Hall of India.

Haspelmath, M and Sims, A 2013. Understanding Morphology. Routledge.

Jurafsky, D. and Martin, J H, 2014. Speech and language processing (Vol.3), London, Pearson.

Grune, D. and Jacobs, C J, 2008. Parsing techniques- Practical Guide, David Gries and Fred P. Schneider, Eds.

Kubler, S, McDonald, R. and Nivre, J, 2009. Dependency Parsing. Synthesis Lectures on Human Language Technologies, 1 (1), ppt 1-127.

Pavankumar Satuluri, 2015. Sanskrit Compound Generation: with a focus on the Order of Operations, Thesis, University of Hyderabad.

Anil Kumar, 2012. An automatic Sanskrit Compound Processing, Thesis, University of Hyderabad.

Module 3 and 4

The Vakyapadiya of Bhartrhari, Kanda III- Sadhanasamuddesa selected verses only.

Additional Readings: The Prakasha commentary of Vakyapadiya by Helaraja, The Vaiyakaranasidhanta Lkhumanjusha- Subarthavicharah, The Bhushanasara of Kounda Bhatta- Subarthanirayah.

MAHATMA GANDHI UNIVERSITY

M A PROGRAMME-PGCS

MODEL QUESTION PAPER

SANSKRIT SPECIAL VYAKARANA

Semester- III

SA050305-NLP AND SEMANTIC CONCEPTS OF BHARTRHARI

Time:3hours

Weight 30

Section A

I. Write answer for any eight.

1. Describe the term Natural Language.
2. How NLP is used in structuring unstructured Data?
3. What is Parsing?
4. What is LWG?
5. Explain the recent developments in the study of language?
6. Explain Sanskrit compound processing?
7. साधनं नाम किम्।
8. पदकाण्ठे कति समुद्देशाः सन्ति।
9. कति साधनानि सन्ति।
10. चतुर्थीविधायिकां कारिकां लिखत।
(1x8=8)

Section B

I. Write Short essays on any six.

11. Note the linguistic complexity of NLP
12. What is language analyzer in NLP?
13. Write a note on karaka to vibhakti mapping.
14. Elucidate some examples of application of NLP.
15. बुद्ध्या समाहितैकत्वान्, पञ्चालान् कुरुभिर्यथा।

- पुनर्विभजते वक्ता, तदापायः प्रतीयते॥ व्याख्यात।
16. औदासीन्येन यत् प्राप्यं, यच्च कर्तुरनीप्सितं।
संज्ञान्तरैरनाख्यातं, यद्यच्चान्यपीर्वकम्॥ व्याख्यात।
(6x2=12)
17. किम् नाम अपादानम्। विवृणुत।
18. कर्मणस्त्रैविध्यं प्रतिपादयत।

Section C

- II. Write essays on any two.
19. Write an essay on five steps involved in NLP.
20. How many types of modifier modified groups are there explain.
21. प्रथमायाः कारकत्वविषये वाक्यपदीयमतं सम्यक्
निरूपयत।
22. कर्मणस्त्रैविध्यं उपन्यस्यत।
(5x2=10)