Department of Sanskrit
University of Delhi
Under Graduate Course for Sanskrit
B.A. (Hons.) Under UGCF-22

GE-5:
Tools and Techniques for Computing Sanskrit Language

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Tools and Techniques for Computing Sanskrit Language	04	3	1	0	Class XII Pass	Nil	Sanskrit

Learning Objectives:

This course will introduce the current research and development in Sanskrit computing. Primary emphasis will be on tools and techniques developed under government and private funding and to explore new technologies for Sanskrit.

Learning Outcomes:

The course-level learning outcomes that a student of this course is required to demonstrate are indicated below:

- Learn the basic concept of Sanskrit Phonology, Sanskrit Morphology, Syntax, Semantics, Lexicon and Corpora.
- Learn the origin and Development of Language Computing.
- Basic Introduction of Computing Sanskrit Language.
- Various methodologies used on Language Technology.
- Various tools developed for Sanskrit Language.
- Survey of Language Computing

SYLLABUS OF GE-5

Unit: I **Credit: 01**

Major Components of Sanskrit Linguistics:

- Phonology
- Morphology
- Syntax
- Semantics
- Lexicon and Corpora

Unit: II **Credit: 01**

Areas and Applications of the Sanskrit Language Computation

- Text Digitization/Content Creation and Search for Sanskrit
- Speech Technology
- Grammar Tools
- Machine Translation
- Preservation and Delivery of Cultural Heritage of Sanskrit

Unit: III **Credit: 01**

Language Computing Methodology

- Rule Base
- Statistical
- Hybrid

Unit: IV **Credit: 01**

Survey of Language Computing

- Survey of the Language Computing for Sanskrit
- Survey of the Language Computing for Indo Aryan Languages

[D] References:

Compulsory Readings:

1. Akshar Bharati, Vineet Chaitanya and Rajeeva Sanghal, Natural Language Processing: A Paninian Prospective, Prentice Hall of India, New Delhi, 1995.
2. Chandra Subhash (2021). भाषासंगणन (Language Computing), Upasana Publications, New Delhi, India, ISBN: 978-93-87677-05-0.
3. Girish Nath Jha, Madhav Gopal, Diwakar Mishra, Annotating Sanskrit Corpus: Adapting IL-POSTS, Human Language Technology. Challenges for Computer Science and Linguistics Lecture Notes in Computer Science Volume 6562, 2011, pp 371-379.
4. Tools developed by Computational Linguistics Group, Department of Sanskrit, University of Delhi, Delhi-110007 available at: http://cl.sanskrit.du.ac.in
5. Daniel Jurafsky and James H. Martin, Speech and Language Processing, Prentice Hall; 2008
6. Chandra, Subhash and Jha, GN. Computer Processing of Nominal Inflections in Sanskrit: Methods and Implementations, CSP, UK, 2012.
7. Jha, Girish Nath, Morphology of Sanskrit Case Affixes: A Computational Analysis, M.Phil Dissertation, Centre of English and Linguistics, School of Language, Literature and Culture Studies, JNU, 1993.
8. Sanskrit Computational Linguistics symposium 1-2: Springer Verlag LNCS 5402 G Huet, A Kulkarni and P Scharf (eds), Proceedings of the 1st and 2nd International Symposium, 2009.
9. Sanskrit Computational Linguistics symposium 3: Springer Verlag LNCS 5406 A Kulkarni, G Huet (eds), Proceedings of the 3rd International Symposium, Jan 15 - 17, 2009, Hyderabad.
10. Grishman, R., Computational Linguistics: An introduction, Cambridge University Press, 1986.

11. Chandra, Subhash .मशीनी अनुवाद (Machine Translation) Vidyanidhi Prakashana, New Delhi,

[E] Teaching Learning Process:

Lecture based Teaching Learning on the Basics of Tools and Techniques for Computing Sanskrit Language, Detailed Survey of Language Computing tools and Techniques for Background will be covered in this course. It will be very helpful to students to engage them in laboratory and practice basic tools and techniques of computer.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.