For students of all Branches [S. Y. /T. Y. /Final year B. Tech. /M. Tech.]

Course Title : Computational Sanskrit

Prerequisite: Programming using any high-level language.

Course Objectives:

1. To understand the paradigm of programming known as Functional Programming using Haskell language.
2. To understand the working of Pāṇini's Sanskrit grammar by focusing on the phonetic and morpho-syntactic machinery of the grammar.
3. To computerize the rules of Pāṇini's Sanskrit grammar using Haskell programming language.
4. To appreciate how well-defined the grammar is and its similarity to computer programs.

Course Outcomes: Students will demonstrate the ability to

1. Tell which rule(s) of grammar is applicable in a given string of Sanskrit text.
2. Describe the phonetic properties of phonemes in the Sanskrit character set.
3. Use concepts like recursion, list processing etc. in Haskell to solve computational problems.
4. Create a specification of a problem and write a program to suit the specification.

Course Contents:

Module	Details	Hours
1	Haskell Language: Concepts like types, functions, lists, recursion etc.	4
2	Sanskrit Character Set: Vowels, Consonants, Phonetic Properties	4
3	Pāṇini's Sanskrit Grammar: Important notions like *pratyāhāra*, *saṃjñā*	4
4	Substitutions: *ādeśa* and *ekādeśa*	4
5	Rule Conflict and Resolution: *vidhi*, *niyama* and *niṣedha* rules	4
6	Specifications: Adapting Pāṇinian Rules for Computation	4
7	Tips on implementation of the rules	2

There will be programming tutorial for every topic mentioned in the 'Details' column.

Text Books:

1. Brian O'Sullivan, John Goerzen and Don Stewart, 'Real World Haskell', O'reilly.
2. MiranLipovača, 'Learn You a Haskell for Great Good!', No Starch Press.
3. S. C. Vasu, 'The Ashtadhyayi of Panini. 2 Vols.', Motilal Banarsidass.
4. Rama Nath Sharma, 'The Ashtadhyayi of Panini. 6 Vols.', MunshiramManoharlal Pub.

Evaluation pattern will be described by the concerned course coordinator during the course.