1. Syllabus

Course Name	**Implementation of Programming Languages**
Total Credits	8 (3 1 0 8)
Prerequisite	Nil
Text Reference	1.Alfred V. Aho, Monica S. Lam, Ravi Sethi and Jeffrey D. Ullman: Compilers: Principles, Techniques, and Tools, 2/E, Addison-Wesley 2007. 2.Andrew Appel : Modern Compiler Implementation in C/ML/Java, Cambridge University Press, 2004 3. Dick Grune, Henri E. Bal, Cerial J.H. Jacobs and Koen G. Langendoen: Modern Compiler Design, John Wiley & Sons, Inc. 2000. 4. Michael L. Scott: Programming Language Pragmatics, Morgan Kaufman Publishers, 2006.
Description	The compiled and interpreted execution models. Lexical analysis and parsing using lex and yacc. Scope and visibility analysis. The role of types. Type analysis of a language with basic types,derived types, parametric polymorphism and subtypes. Binding times. Data layout and lifetime management of data. Stack and heap as storage structures. Implementation of function calls. Activation records structures. Dynamic memory allocation and Garbage collection. Implementation of higher order functions - closures. Implementation of control structures, exception handling. Implementation of object oriented concepts -- objects, inheritance and dynamic dispatch. Implementation of a naive code generator for a virtual machine. Security checking of virtual machine code.
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2. Lecture Schedule

Lec 1	Lec 2	Lec 3	Tutorial
Mon 10:30	Tue 11:30	Thu 8:30	Mon 8:30
LC 301	LC 301	LC 301	CC 103

While the designated tutorial hr is on Mon 8:30 am, this will not be strictly followed. A tutorial will be conducted at an adequate point in time; therefore students are advised to attend all the 4 hours.

3. EVALUATION SCHEME FOR CS 302

The scheme for evaluation proposed for the Spring offering of the course for the academic session 2016-2017,   to be discussed in the first lecture on January 02, 2017, is summarized below.

	End-semester	*Mid-semester*	*Quizzes*	*Class participation*		*Total*
Frequency	1	1	2	Lecture attendance & involvement	Tutorial attendance and problem solving (10)	
Weightage	40%	25%	25%		10%	100%
Marks	80	50	40	10	20	200

You are permitted to carry one handwritten A4 sheet, NON TRANSFERABLE, in all the written examinations of CS 302.

Zero tolerance for use of unfair means in any evaluation of the course.

4. LINKS WITH OTHER CSE COURSES

1. Data Structure and Algorithms
2. Theory of Computation
3. Architecture
4. Operating Systems
5. Software Systems Lab

5. COMPLEXITY OF SOFTWARE SYSTEMS

Name	Category	1st Rel	No of Dirs	No of Files	Lines of Code	White spaces	No of Langs	Main Language
Linux 4.9-rc.5	OS Kernel	1991	3830	45884	**20659032**	36%	18	C
Gcc 6.2.0	**Compiler Framework**	**1987**	**5500**	**79499**	**10638200**	**33%**	**33**	**C, C++**
Mysql 5.7.16	DBMS	1995	1533	10656	**3901791**	29%	27	C++, C

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