

**Department of Computer Science and Engineering
National Institute of Technology Calicut**

Tentative Course Details : Monsoon 2016

CS4022 Principles of Programming Languages

Course:

Code : CS4022
Title : Principles of Programming Languages
Credits : 04
Slot : G, G+
Room : NLHC 101

Instructor:

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Course Objective:

To introduce the students to

- the concepts and constructs of programming languages
- formal semantics, type systems and type safety
- the design and implementation of programming languages

References:

- Benjamin C Pierce. *Types and Programming Languages*. MIT Press, 2002.
- Allen B Tucker, Robert E Noonan. *Programming Languages: Principles and Paradigms*, Second Edition, Tata McGraw-Hill, 2007.
- Luca Cardelli. Type Systems. In Allen B Tucker, Ed. *Handbook of Computer Science and Engineering*. CRC Press, 1996.
- Michael L Scott. *Programming Language Pragmatics*. Elsevier, 2004.

Assignments:

1. Functional Programming.
2. Implementation of the language of Arithmetic Expressions, Typed Lambda Calculus and extensions.

Course Schedule:

	Evaluation	Topic
Week 01		Programming Languages: Introduction
Week 02		Untyped Arithmetic Expressions: Syntax
Week 03		Formal Semantics
Week 04	Quiz I	Type Systems, Type Safety
Week 05		Untyped Lambda Calculus: Basics
Week 06	Midterm Exam I	
Week 07	Assignment Evaluation I	Untyped Lambda Calculus: Semantics
Week 08		Untyped Lambda Calculus: Programming
Week 09		Simply Typed Lambda Calculus
Week 10		Simply Typed Lambda Calculus
Week 11	Midterm Exam II	
Week 12		Extensions: Base Types, Let Bindings
Week 13		Extensions: Pairs, Records
Week 14	Quiz II	Extensions: Sums, Variants
Week 15	Assignment Evaluation II	References
Week 16		Exceptions
Week 17		Subtyping

Grading: Exams and Assignments:

Mid-Term Exam I	: 15%
Mid-Term Exam II	: 15%
Assignments	: 10%
Quizzes	: 10%
Final Exam	: 50%

Grading: Policies:

- Grading will be relative.
- Even though the grading will be relative here is a tentative grade distribution:
90-100: S; 80-89: A; 70-79: B; 60-69: C; 50-59: D; 40-49: E; <40: F.
- All issues regarding valuation of exams must be resolved within one week after the marks are announced.

Standard of Conduct:

Each student is expected to adhere to high standards of ethical conduct. The department policy on academic integrity can be found at: <http://cse.nitc.ac.in/sites/default/files/Academic-Integrity.pdf>