

CSE 4250 Programming Language Concepts (3 credits)

Primary instructor: Ryan Stansifer

Supporting instructor: Marius Silaghi

Textbooks and references:

R. W. Sebesta, Concepts of Programming Languages, 10th edition. Addison-Wesley, 2012. (R)

Course information:

2014–2015 Catalog description: CSE 4250 Programming Language Concepts (3 credits). Surveys programming language concepts and design principles of programming paradigms (procedural, functional and logic). Includes a history of programming languages, data types supported, control structures and run-time management of dynamic structures. Prerequisites: CSE 2010 or ECE 2552.

Prerequisites by topic: Algorithmic paradigms, data processing algorithms, recursion, basic data structures

Place in program:

Computer Science Program: Required

Software Engineering Program: Advanced elective.

Course outcomes & related student outcomes: The student will be able to

1. Comprehend regular expressions and Backus-Naur Form (BNF). (1: Fundamental knowledge)
2. Understand the value of formal semantics. (2: Scientific, computing, and engineering problem solving)
3. Choose an appropriate programming language for the task. (3: Skillful use of tools)
4. Learn new programming languages more easily. (4a: Skillful software construction)
5. Understand implementation trade-offs. (4c: Trade-offs in design choices)
6. Discuss major language paradigms. (2: Scientific, computing, and engineering problem solving & 4c: Trade-offs in design choices)

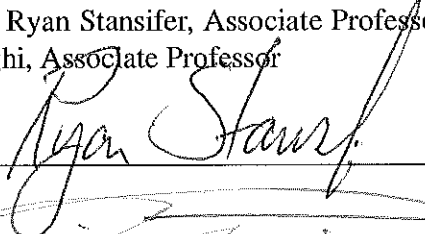
Topics covered:

1. History and evolution of programming languages (3 hours)
2. Syntax: Regular expressions and BNF (3 hours)
3. Semantics: Axiomatic, operational, and denotational (3 hours)
4. Names, pointers, and references (3 hours)
5. Data types and polymorphism (3 hours)
6. Blocks, scope, subprograms, and non-local variable access (3 hours)
7. Abstract data types and modules (3 hours)

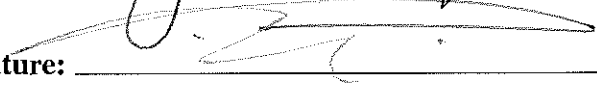
8. Functional programming (5 hours)

9. Logic programming (5 hours)

Approved by: Ryan Stansifer, Associate Professor, Director of Computer Science Programs
& Marius Silaghi, Associate Professor

Signature:  _____

Date: 30 Jan 2015

Signature:  _____

Date: 30/01/2015