

## CSCE 330 - Programming Language Structures

**Credit Hours:** 3 hours

**Contact Hours:** 3 lecture hours

**Instructor:** Dr. Valtorta

**Required Textbooks:** Hector J. Levesque. *Thinking as Computation*. The MIT Press, 2012

- Graham Hutton. *Programming in Haskell*. Cambridge University Press, 2007.

**Bulletin Description:** Formal specification of syntax and semantics; structure of algorithms; list processing and string manipulation languages; statement types, control structures, and interfacing procedures.

**Prerequisites:** CSCE 240, MATH 174 or MATH 374

**Required Course** in CS program

**Learning Outcomes:** Students will be able to:

1. Categorize a language as imperative (procedural), functional (applicative) or declarative (logic).
2. Generate and use syntax descriptions in EBNF.
3. Write code in a functional language (e.g., Haskell).  
Write code in a logic language (e.g., Prolog).

**Student (Program) Outcomes addressed by course** (Detailed mappings of these course outcomes to the Student Outcomes of the programs are in the detailed syllabus and the Assessment plan.)

Student Program Outcomes	SOs supported	SOs Moderately supported
Computer Engineering	c, e, k	a, i
Computer Information Systems		
Computer Science	a, c, i	h, CS-j

**Topics covered:**

1. Evolution of major programming languages (2 hours)
2. Formal description of programming language syntax (4 hours)
3. Denotational semantics (1 hours)
4. Interpreters, compilers, assemblers (2 hours)
5. Data abstractions (3 hours)
6. Control abstractions (2 hours)
7. Run-time behavior of programs and procedural semantics (3 hours)
8. Programming environments (3 hours)
9. Functional languages (14 hours)
10. Logic languages (8 hours)