

## Based on ABET ETAC Student Learning Outcomes

**1. Course Number and Name:**

CSET 4250 Comparative Programming Languages

**2. Credits and Contact hours:**

Credits: 3 hours, Contact: 3 lecture hours

**3. Instructor's or course coordinator's name:**

Weiqing Sun

**4. Text book, title, author, and year:**

Concepts of Programming Languages, 9<sup>th</sup> Edition, Robert W. Sebesta, 2009

**a. Other supplemental materials:**

None

**5. Specific Course Information:**

**a. Brief description of the content of the course (catalog description):**

This course teaches methodologies to select the most appropriate language for a specific engineering technology application. Topics include comparison of programming languages by evolution, formal specifications, structures, features, application domains, programming paradigms, implementation of syntax, semantics and program run-time behavior.

**b. Pre-requisites, or co-requisites:**

CSET 4100 and Junior Standing

**6. Specific goals for the course:**

**a. Specific outcomes of instruction:**

1. Be able to explain and apply a broad range of concepts about programming languages.
2. Be able to recognize, define, and make correct use of most common programming languages terminology.
3. Design, implement, test, and debug simple programs in an object-oriented programming language, functional paradigm logical programming and scripting languages.
4. Identify and describe the properties of a variable such as its associated address, value, scope, persistence, and size.

**b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course: a, b, f**

A. An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities.

B. An ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require application of principles and procedures or methodologies.

F. An ability to identify, analyze, and solve broadly-defined engineering technology problems.

**7. Brief list of topics to be covered:**

1. Introduction to Programming Languages
2. Attribute Grammar and Static Semantics
3. Describing Syntax and semantics
4. Parsing
5. Attributes of Variables, binding, scopes
6. Data Types
7. Perl Introduction
8. Expressions Statements
9. Statement-Level Control Structures
10. Subprograms
11. ADT and Encapsulation Constructs
12. Object Oriented Programming
13. Functional Programming Languages
14. Logic programming and Prolog
15. Concurrency, Exception
16. Advanced topics: Programming Language Design