

**University of Texas at El Paso**  
**Course Syllabus**

**COURESE DESCRIPTION**

<b>Dept., Number</b>	CS 3360	<b>Course Title</b>	Design and Implementation of Programming Languages
<b>Approval Date</b>	September 2018	<b>Course Coordinator</b>	

**CATALOG DESCRIPTION**

Design and Implementation of Programming Languages (3-0) Design features of modern programming languages, including flow control mechanisms and data structures; techniques for implementation of these features.

**TEXT BOOK**

*Robert W. Sebesta. Concepts of Programming Languages, 11<sup>h</sup> edition, Pearson, 2016.*

**COURSE OUTCOMES**

**Level 1: Knowledge and Comprehension:**

Level 1 outcomes are those in which the student has been exposed to the terms and concepts at a basic level and can supply basic definitions. Upon successful completion of this course, students will:

- a. Describe broad trends in the history of development of programming languages.
- b. Explain the stages of programming language interpretation and compilation.
- c. Understand data and control abstractions of programming languages.
- d. Understand how attribute grammars describe static semantics.

**Level 2: Application and Analysis:**

Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., can work a problem of familiar structure with minor changes in the details. Upon successful completion of this course, students will be able to:

- a. Define syntax of a small context-free grammar in BNF and EBNF
- b. Define the syntax of a small subset of a programming language in BNF and EBNF.
- c. Formally describe the dynamic semantics of small subsets of programming languages, e.g., expressions and control structures.
- d. Compare different approaches to naming, storage bindings, typing, scope, and data types.
- e. Analyze design dimensions of subprograms, including parameter passing methods, sub-programs as parameters, and overload subprograms.

**Level 3: Synthesis and Evaluation**

Level 3 outcomes are those in which the student can apply the material in new situations. This is the highest level of mastery. Upon successful completion of this course, students will be able to:

- a. Evaluate modern, representative programming languages critically w.r.t. design. concepts, design alternatives and trade-offs, and implementation considerations for scope, binding, data types, expressions, control structures, subprograms, abstract data types, objects, concurrency structures, and exception handling.
- b. Choose a suitable programming paradigm and language for a given problem or domain.

**ABET STUDENT OUTCOMES MAPPING**

<b>Course outcomes</b>	<b>ABET Student outcome</b>
3a, 3b	1
3b	2
None	3
None	4
None	5
1b, 1c, 2d, 3a, 3b	6

**PREREQUISITES BY TOPIC**

CS 2302 with a grade of C or better
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