



**BAKER COLLEGE**  
**STUDENT LEARNING OUTCOMES**

**CS1110 Introduction to Programming**  
**3 Semester Credit Hours**

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**Student Learning Outcomes and Enabling Objectives**

1. Examine Python terminology, syntax, and methodology.
  - a. Describe basic features of Python.
  - b. Define variables, expressions, objects, types, and operators.
  - c. Compare different flow control mechanisms including Selection (if-elif-else), Repetition (while), and Iteration (for).
  - d. Construct functional programs using the elements above to solve given problems.
  
2. Explore algorithms for program development.
  - a. Contrast algorithms and programs.
  - b. Describe basic features of algorithm and programs.
  - c. Construct algorithms for program development.
  
3. Explain strings and their use in Python programming.
  - a. Define strings and string representation.
  - b. Explain string operations, methods and functions.
  - c. Construct a functional program involving strings.
  
4. Explore functions in Python.
  - a. Describe the elements of a function, function flow, and parameter passing.
  - b. Explain function scope, functions as objects, and passing mutable objects.
  - c. Construct a functional program involving functions.
  
5. Explain file handling in Python.
  - a. Discuss reading and writing in a text file.
  - b. Describe file creation and overwriting.
  - c. Construct functional programs for file manipulation.
  
6. Explore lists and tuples.

- a. Contrast lists and tuples.
  - b. Explain mutable objects and references.
  - c. Interpret data structures including lists, queues, dictionaries, sets and matrices.
  - d. Construct well-documented, functional programs incorporating lists.
7. Analyze dictionaries and sets.
- a. Explain basic features of dictionaries and sets.
  - b. Illustrate dictionaries and sets applications.
  - c. Construct a well-documented, functional program involving a dictionary or a set.
8. Develop a functional program to solve a given problem.
- a. Illustrate the divide and conquer approach for developing the program.
  - b. Design the algorithm for the program.
  - c. Develop the program.
  - d. Debug the program.

## **Big Ideas and Essential Questions**

### **Big Ideas**

- Core principles of programming
- Developing programs from simple to complex using a divide and conquer approach
- Using the Spyder Integrated Development Environment to facilitate developing and testing a Python program

### **Essential Questions**

1. How do programmers solve problems?
2. What is the Python programming environment?
3. Why do programmers use the Python programming environment?
4. What are the elements of the Python programming environment?
5. What kind of applications is Python particularly well suited for implementing?
6. What are the limitations of the Python programming environment?

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These SLOs are approved for experiential credit.

**Effective: Fall 2021**