University of Texas at El Paso
Course Syllabus

COURSE DESCRIPTION

Dept., Number	CS 1101	Course Title	Intro to CS Lab
Approval Date	April 2022	Course Coordinator	Daniel Mejia

CATALOG DESCRIPTION

Introduction to Computer Science Lab First course for students majoring in Computer Science. Introduction to problem solving with computers, including representation, control structures, and software development methods; closed laboratory and programming assignments in a high-level language; programming environments; social and ethical aspects of computing.

TEXTBOOK

Introduction to Java Programming and Data Structures, 13th Edition
Y. Daniel Liang

COURSE OUTCOMES

Learning Outcomes
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:

1. Analyze problems, design and implement solution algorithms, including correct use of:
    a. Simple I/O operations (reading from and printing to the terminal)
    b. User-defined types and their implementation as classes
    c. Basic string manipulation techniques using language functions, including:
        i. Traversing strings,
        ii. Accessing characters,
        iii. Comparing strings,
        iv. Concatenating strings
2. Algorithm-tracing techniques to ensure solution correctness including method calls
3. Use testing and debugging strategies to identify software faults by creating test suites that include:
    a. Black-box test cases
    b. Basic white-box test cases
4. Use general software engineering principles, including abstraction and problem decomposition in problem and solution analysis
5. Use informal pseudocode to describe algorithms
6. Use 2D arrays
7. Use recursion for solving simple problems
8. Instead of IDEs, use a command line interface (terminal) to compile and execute programs.
9. Use teamwork roles and strategies in the classroom

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. On successful completion of this course, students will be able to use the syntax and semantics of a high-level language to express solutions to programming problems, including the pseudocode correct use of:
1. Basic variable types including Booleans, integers, real numbers, characters, strings,
2. 1-D arrays
3. Assignment and arithmetic
4. Logical propositions to define conditional and loop statements
5. For-loops
6. While-loops
7. Methods/functions, parameter passing, return values
8. Algorithmic building blocks including:
    a. Min
    b. Max
    c. Average
    d. Summation
    e. Linear search
9. Coding and documentation standards

ABET STUDENT OUTCOMES MAPPING

Course Outcomes	Student Outcome
3.3, 3.4	1
2.2	2 (ABET 1)
2.1, 2.4 – 2.8, 3.1 – 3.8	3 (ABET 2)
2.10	4 (ABET 5)
	5 (ABET 4)
2.10	6 (ABET 3)
	7
	8
2.1, 2.9	9
2.2, 2.3, 3.9	10 (ABET 6)

PREREQUISITES BY TOPIC

MATH 1508 or MATH 1411 with a grade of C or better