CS121 - Introduction to Computer Science

This course builds upon CS120 to introduce students to the theoretical foundations of computer science. The major objectives of the course are to guide students to:

- Strengthen programming and computational thinking skills by solving more complex problems, recognizing that computer science involves both implementing solutions and reasoning about them.
- Reason and communicate about program efficiency using a formal framework comprised of complexity analysis, Big O notation, and time/space trade-offs.
- Study, compare, and analyze algorithms by exploring and implementing foundational searching and sorting algorithms.
- Apply advanced object-oriented programming principles by building on concepts from CS120 with inheritance and interfaces.
- Think critically about how we organize and manipulate data, beginning the formal study of data structures by implementing and analyzing linked lists.

Topic 1. Review of Algorithmic Thinking and AI Literacy (1 Lecture)

Topic 2. Complexity of Algorithms – Big O (3 Lectures)

Topic 3. Union-Find (2 Lectures)

Topic 4. Iterative Searching and Sorting Algorithms (3 Lectures)

Topic 5. Recursion (2 Lectures)

Topic 6. Recursive Searching and Sorting Algorithms (4 Lectures)

Topic 7. Review Object Oriented Programming and Unit Testing (2 Lectures)

Topic 8. Inheritance (2 Lectures)

Topic 9. Linked Lists (4 lectures)