Chris Champagne

SAAST - Computer Science

<http://www.cis.upenn.edu/~saastcmp/>

Class Time

9-11 am

1-3 pm

3:30-5 pm

**Day 1**

Computer Science?

Chemistry: the study of chimcials, how micro/macroscopics things interact -- study of matter 1.

Physics: study of motion, velocity, forces, how things work

Mathematics: the study of patterns

Computer science: the study of computers, the study of computation

Computational/algorithmic thinking

– a way of problem solving

1. Precision – explaining precisely the problem and solution
2. Decomposition – breaking up a problem into chunks
3. Abstraction – making a solution usable in many other circumstances

Computer Science – The Field

* Programming Languages
* Computer Graphics
* Computer Architecture (Hardware)
* Machine Learning
* Market and Systems Engineering
* Algorithms
* Databases and Information Retrieval
* Embedded and Distributed Systems

“Programming is like talking to your best friend in a foreign language”

Translation

Compilation

Interpretation

**Day 2**

Recap: Algorithmic Thinking:

* Precision - **Expressions**
* Decomposition – Functions, **Loops**
* Abstraction

**Types of Data**:

Primitive

int (0,3,-2)

float (2.78, 3.14, -0,80)

bool (True, False)

str (“hi”)

Compound

[3,4,5]

str (“hi”)

**Expressions:**

+ Literal Values

+Compound expression joined with operators