Introduction to Computer Science

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Prerequisites

This is an introductory course, that does not require prerequisite experiences. In other words, this course is aimed at students with little or no prior programming experience, but a desire to understand computational approaches to problem solving.

Nevertheless, for you to learn in this course (any course), it is definitely helpful if you are **curious**.

If you determine to participate in this course, there is a general survey. Please take the survey below:

https://pennstate.qualtrics.com/jfe/form/SV_ba8qvNlWmPgB1eB

Objectives

After this course, I cannot guarantee that you will be a computer scientist. However, you will be thinking like a computer scientist.

If you want to write a program to hack DoD or NASA through the knowledge and skills from this course, you will be disappointed. However, you will definitely understand why this is a difficult thing.

The course's objective is that you gain:

A broad and robust understanding of computer science and programming

Strategies to think algorithmically and solve programming problems efficiently

Understanding of concepts like abstraction, algorithms, data structures, encapsulation, resource management, security, software engineering, and web development

Familiarity in several languages, including Java, SQL, etc.

Course Outline

Major Topics

Computer- The Magic Machine (four classes)

Artificial Intelligence (four classes)

Computer Network (four classes)

Data Management (four classes)

Schedule

Module	Date	Topic
Computer- The Magic Machine	June 12	Introducing each other; Course Overview
	June 13	Information Theory
	June 15	Programming Basic
	June 16	Algorithms
Artificial Intelligence	June 19	Turing Machine
	June 20	Classification
	June 22	Clustering
	June 23	The Future of AI
Computer Network	June 26	Open Systems Interconnection model
	June 27	Internet Protocol Suite
	June 28	Cloud Computing
	June 29	Security
Data Management	July 6	Database
	July 7	Structured Query Language (SQL)
	July 10	Big Data
	July 11	Last day of class: Shared reflections

Materials

There is no textbook requirement. Some free textbooks' quality is fully competitive with the conventionally expensive, published, printed computer science textbooks. For example*, Introduction to Computing* (http://www.computingbook.org/FullText.pdf).

This course will not use any specific textbooks. I will provide some reading material and concise handouts for lectures' topic.