香港中文大學(深圳) | 数据科学学院
The Chinese University of Hong Kong, Shenzhen | School of Data Science

Introduction to Computer Science and Java Programming

CSC 1003

Fall 2022

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Thank you!

For choosing CUHK-SZ

For choosing CSC1003 as your programming course

CSC1001 vs CSC1003

As required by the school,

- A student can take either CSC1001 or CSC1003 to fulfill the school package requirement, but not both.

- The choice does not affect the declaration of majors at the end of the 1st year.
- CSC1001 -> CSE major, DSBDT major, STAT major
- CSC1003 -> CSE major, DSBDT major, STAT major

- CSC1003 fits the future study scheme of CSE major better
- Very possibly I'll choose CSE major, then take CSC1003 (but not a must)

CSC1001 vs CSC1003

- This is the first year we offer CSC1003
- Comparatively, CSC1001 was offered from 2015-2016 academic year

- CSC1001: Python + Basic Data Structure/Algorithm
- CSC1003: 50-60% Java + 20-30% CS concepts + ~20% Python

- CSC1001: a general course for programming
- CSC1003: a specialized course designed for leading students into CS

CS: In and Out

Desired characteristics of CS:

- Logic thinking
- Passion
- Diligence
- Innovation

When graduating from CS:

- Pursue development work
- Continue postgraduate study
- Perform inter-disciplinary study (FinTech/Bioinformatics)
- Create start-ups

Our CS Courses

Programming: Python, Java (new), C/C++, Internet Programming

Foundations: Digital Logic, Data Structure, Algorithm, Compiler, Discrete Maths

AI: Artificial Intelligence, Machine Learning

System: Computer Architecture, OS, Network (new), Cloud, Parallel Computing

Rich Media: HCI (new), Graphics (new), Multimedia, Speech Processing (new), NLP (new)

Database, Software Engineering, …

How to learn well in CSC1003?

- Think and Practice
- Preview and Review

The Computer Science (CSC) Program is one of the earliest programs in CUHK-SZ, and enrolled the first batch of students (2015-cohort) in 2016. Since then, with the hard work from the university, the schools, the faculties and the students, the program has become:

1. **One of the most attractive programs in the university**. On average, the program attracts more than 100 fresh undergraduate students (most recently, 160) to join. The success of the program also attracts more and more high-quality students, such as national silver-medal in informatics, to apply for our university.
2. **A program with a good coverage of subjects**. Following the same standard as in CUHK-Shatin, the program has a complete curriculum with major-required and major-elective courses covering all essential areas in CSC, from hardware to software, from system to theory.

Meanwhile, CSC is a fast-developing area. According to *Computing Curricula Report 2020* by ACM and IEEE-CS, its education involves both state-of-the-art techniques and insights into the future. The training includes Knowledge ("know-what"), Skills ("know-how") and Dispositions ("know-why"). **This report focuses on improving students' programming skills**. One measurable objective is to train CSC students with around 50 to 100 thousand lines of code in 4-year UG study.

Basic Information

- ***Instructor:***
- Dr. Chenhao Ma (machenhao@cuhk.edu.cn, 319b Daoyuan Building)
- Office hour: 10:30-11:30am Tue/Thu

- ***Teaching assistant:***
- Ms. Mickey Ma (mickeyma@cuhk.edu.cn)
- Mr. Long Xu (222043010@link.cuhk.edu.cn)
- And more USTFs (undergraduate student teaching fellows)

- ***Course materials and discussions:***
- [BlackBoard]

- (L01 led by Dr. Wenye Li)

Basic Information

- ***Lecture***
- Tuesday 8:30-10:20am, Thursday 9:30-10:20am
- Administration Bldg E101 / Online

- ***Tutorial***
- TAs and USTFs lead the tutorials (starting from next week)
- In Computer Lab

- ***Practice***
- USTFs lead the practices
- In Computer Lab

- ***Working language: English***
- After-class discussion can be in English/Chinese

Couse Learning Outcomes

- Comprehend, edit, compile, execute and correct Java programs (K&S)
- Use Java language elements such as variables, expressions, data types, statements, and methods comprehensively to create a complete Java program (K&S)
- Analyze, design, and implement a solution to solve a problem by programming (S&V)
- Grasp the key concepts of computer science for further studies in the area (K&V)
- Get prepared for the need of programming skills (such as Python) in future courses (V)

Assessment

- ***4 programming assignments (40%)***
- The first one is given in week #4
- Roughly one assignment every threes after the first one
- May be exempted for NOI gold/silver/bronze winners and first-prize winners in the province-level (come to me for a talk)

- ***Midterm (20%)***
- Closed test in week #8

- ***Final exam (40%)***
- Closed test, no dictionary, no cheatsheet paper

- Tough training, generous grade

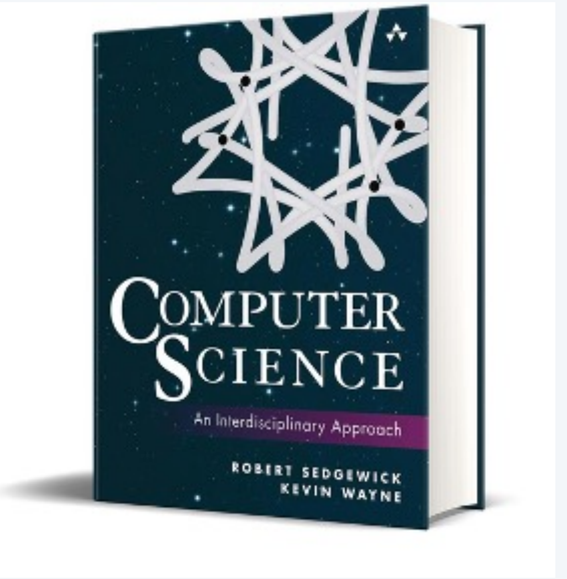
Reading materials

Required

Computer Science: An Interdisciplinary Approach, by Robert Sedgewick and Kevin Wayne, Addison-Wesley Professional, 2016.

Recommended

Python Programming: An Introduction to Computer Science (3rd), by John Zelle, Franklin Beedle, 2003.



Tentative teaching plan

Week	Content/ topic/ activity
1	Prologue and Introduction
2	Basic Programming Concepts
3	Conditionals & Loops
4	Arrays
5	Input and Output
6	Input and Output, Functions and Libraries
7	Functions and Libraries
8	**Midterm Test**
9	Recursion
10	Performance
11	Abstract Data Types and Creating Data Types
12	Popular Programming Languages
13	Python Basics
14	Python Basics

Thanks again for choosing CSC1003