

# IT1016: Introduction to Computer Science / 計算機概論 (2)

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This is an introductory computer science course for CS undergraduate students with specific focus on C and C++ programming language. Students will have gained knowledge of concepts behind object-oriented programming, and the ability to analyze and solve problems with C/C+ using modern development tools, such as Cloud Platform, Remote Editor and Git repository.

## Topics

This course is an introduction to the concepts behind object-oriented programming, with emphasis on the C++ programming language. Topics include:

- 1. File I/O
- 2. Class Concepts
- 3. Operator Overloading
- 4. Pointers and Dynamic Arrays
- 5. Recursion
- 6. Inheritance
- 7. Polymorphism and Virtual Functions
- 8. Templates
- 9. Exception Handling

## Textbook

1. Walter Savitch, "Absolute C++, Global Edition" Sixth Edition
2. Deitel & Deitel, C How to Program 8th Ed., Prentice Hall

## Reference Book

1. Randal E. Bryant and David R. O'Hallaron, Computer Systems: A Programmer's Perspective, 3/E (CS:APP3e)
2. Bjarne Stroustrup, Design and Evolution of C++, The 1st Edition

3. Scott Meyers, Effective C++: 55 Specific Ways to Improve Your Programs and Designs 3rd Edition

4. Stanley Lippman, Josée Lajoie, Barbara Moo, C++ Primer, 5th Edition

## Grading

Your course grade will be determined approximately as follows:

- 20%: Mid-term exam
- 20%: Final exam
- 40%: Quizzes
- 20%: Exercises and homework

項次 No.	時數 Hours	教學進度 Outline	作業和實驗 Homework&Lab
1	3	Course Overview & Review of C Programming	HW#0 問卷調查 程式能力測驗
2	3	Array	QZ#1 課堂小考 程式小考
3	3	Array	
4	3	Strings	QZ#2 課堂小考 程式小考
5	3	Structures	HW#1 C語言練習 程式作業
6	3	Recursive functions	QZ#3 課堂小考 程式小考
7	3	Pointers	
8	3	Streams and File I/O	QZ#4 課堂小考 程式小考
9	3	Function Pointer	HW#2 C語言練習 程式作業
10	3	Dynamic memory management	QZ#5 課堂小考 程式小考
11	3	Object-Oriented Languages/ C++	HW#3 C語言練習 程式作業
12	3	Classes: Encapsulation	QZ#6 課堂小考 程式小考
13	3	Classes: Inheritance	
14	3	Overloading & Polymorphism	QZ#7 課堂小考 程式小考

## IT1016: Introduction to Computer Science (II)

15	3	Virtual Function	HW#4 C++語言作業 程式作業
16	3	Exception Handling	QZ#8 課堂小考 程式小考
17	3	Templates	HW#5 C++語言作業 程式作業
18	3	Final Exam	