Course Introduction

Fundamental Computer Programming- C++ Lab (II)

元智大學 資訊工程學系
Department of Computer Science & Engineering
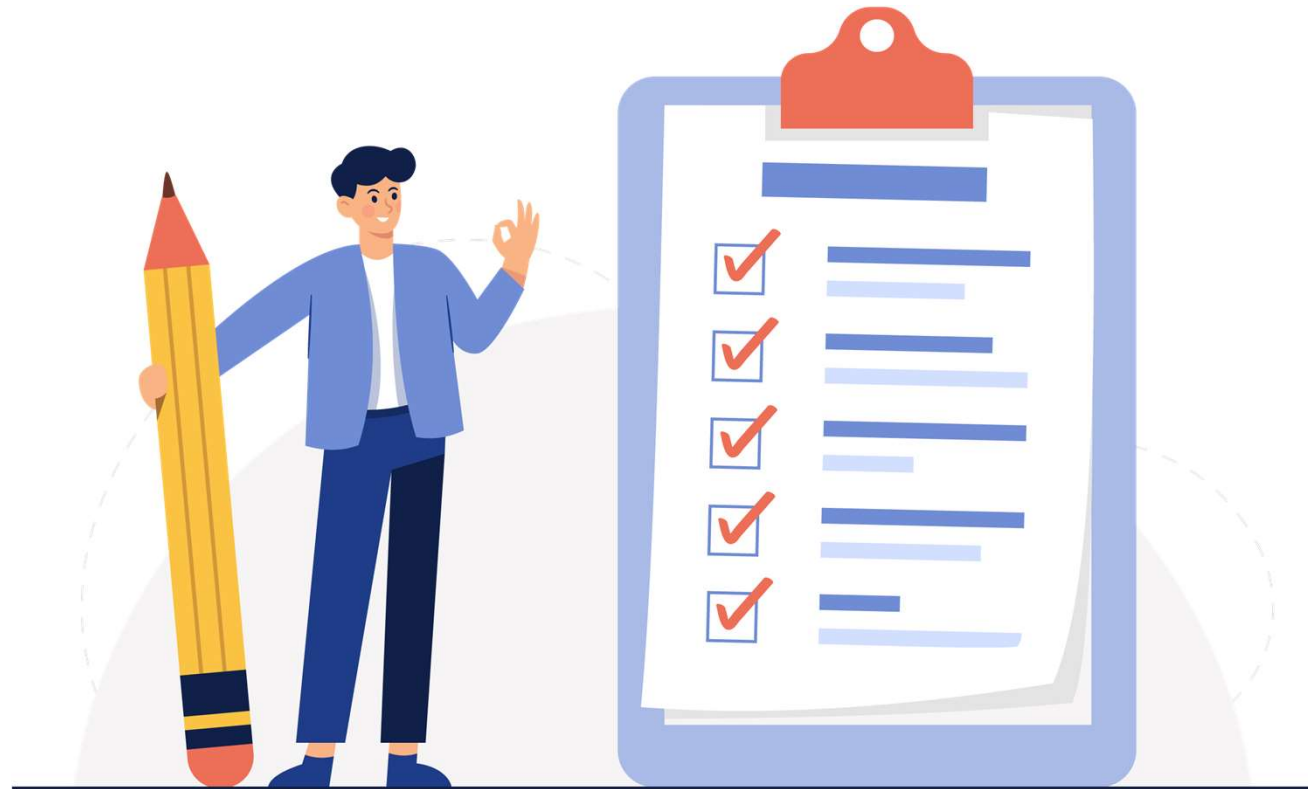
Lecturer: **Ho Quang Thai**

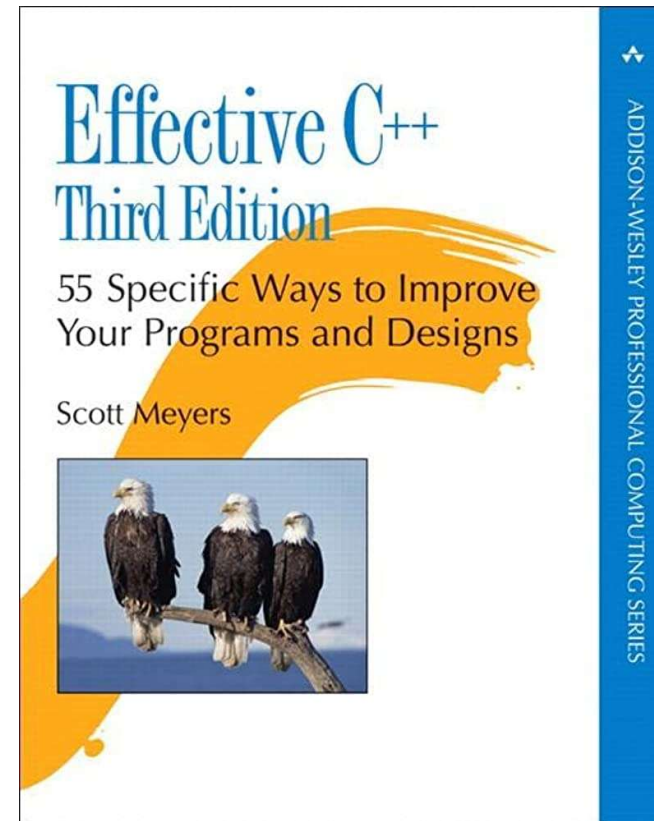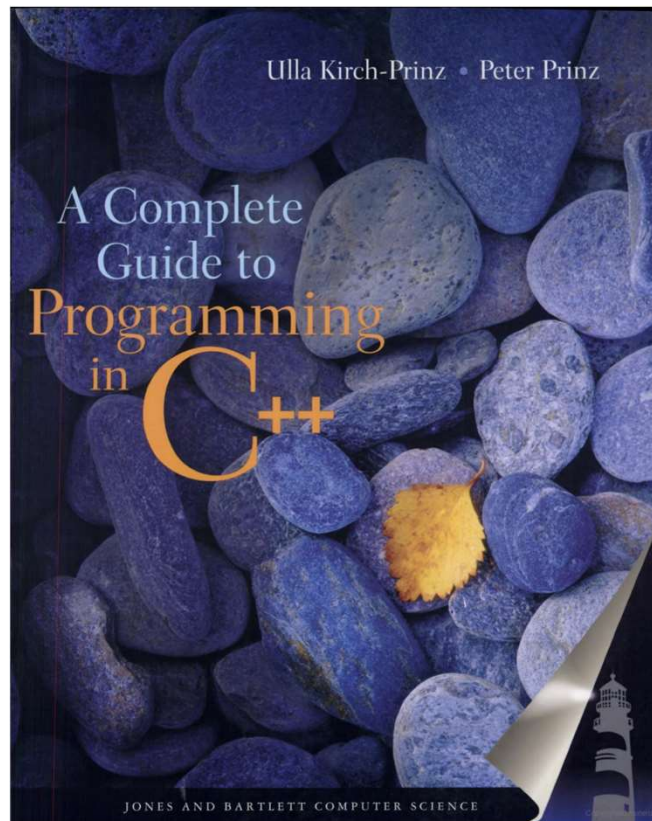# Course outline

Prerequisites

- **Programming language:**
  - C++ (Basic I)

Course Grading

- **Homework:** 50%
- **Midterm Exam:** 20%
  - Solving problems on lab computer
- **Final Exam:** 20%
  - Solving problems on lab computer
- **In-class:** 10%
  - Attendance

References

Q&A

Questions and Answer

WARM UP EXERCISES

Exercise 1

Write a program to input from keyboard 3 numbers a, b and c. Display the entered values in ascending order using only one extra variable.

Input:	34	12	28
Output:	12	28	34

Exercise 2

Write a program to calculate the following sums:

- S0 = n! = 1*2*...*n

- S1 = $1 + \frac{1}{2} + \cdots + \frac{1}{n}$

- S2 = $1 + \frac{1}{2!} + \cdots + \frac{1}{n!}$

Exercise 3

Write a program to reverse a 1-dimensional array.

Input: Please input n: 8

Output: 10 9 7 5 4 3 2 1

1 2 3 4 5 7 9 10

Exercise 4

Write a program to print to the screen the first *n* items of *Fibonacci* sequence using a recursive function.

$$F_n = \begin{cases} 1 & if \ n = 0 \ or \ n = 1 \\ F_{n-2} + F_{n-1} & if \ n \geq 2 \end{cases}$$

Input: Input n: 6

Output: 1 1 2 3 5 8

Exercise 5

Define a structure

```
struct profile{
    string fullname;
    double score;
    string grade;
};
```

Write a program to input the name and score of n students.
Letter Grade is calculated by the following on the right
Calculate letter grade for n students and print as example

Output:

```
FULL NAME          SCORE        GRADE
--------------------------------------------
Lin Jia-Hao        7.5          B
Huang Mei-Ling     4.7          D+
Chen Zhi-Yong      9.2          A
```

Score	Letter Grade
>= 9.0	A
>= 8.0 && < 9.0	B+
>= 7.0 && < 8.0	B
>= 6.0 && < 7.0	C+
>= 5.0 && < 6.0	C
>= 4.5 && < 5.0	D+
>= 4.0 && < 4.5	D
< 4.0	F

Thank you for your attention