# Program Design (II)

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## Introduction

This course provides an introduction to programming in C, covering topics such as Structures, File I/O, and other miscellaneous functions. It also teaches programmers how to develop clean and usable programs and applications. Basic programming knowledge is required to enroll in this course. C is a procedural language that has had a significant impact on many modern programming languages, including C++, Java, and C#. Therefore, understanding the fundamentals of C and knowing how to use them in programming can be beneficial for learning most new programming languages in the future. **If you have enrolled in this course, please also enroll in the Programming Lab for Program Design (II).**

## Learning Objectives

The course introduces advanced concepts, techniques, and tools of C. Homework and the final project are designed to help students practice using C for computer problem-solving and executing computer programs.
The expected learning outcomes of this course are

- Understanding advanced concepts of C
- Designing and developing computer programs and applications in C
- Knowing how to self-learn other more advanced functions and libraries of C to build more complex applications.

# Basic information

## Instructor.

- Fu-Yin Cherng (程芙茵): fuyincherng@cs.ccu.edu.tw

## Lectures.

10:15-11:30 **Tuesday** and **Thursday**. Room 101, College of Engineering (I) (工院一館101教室)

## Textbook.

- C Programming: A Modern Approach by K. N. King, 2nd edition, 2008, W. W. Norton & Company.

# Grading

## Breakdown.

- **Individual Homework 1 - 2**: **20%**
    - You will get a half score on your homework if you submit it **one** day after the deadline, and you will receive **25% points** if you hand in the homework two days (or more) after the deadline.
- **Final Exam: 35%**
- **Group Final Project: 45%**
- *Bonus: 10%*
    - Participation by interacting through eCourse2's discussion forum and Slido
    - Students who were helpful and diligent were recognized by TAs
    - If you take the Collegiate Programming Examination (CPE) in these two years, the number of passed questions will be the number you can get for the extra bonus
    - Finish questions on the platforms like https://zerojudge.tw/ or https://leetcode.com/ and upload the proof on eCourse2. Students can earn one extra point for every 10 questions completed.
        - For Zerojude, the finished questions that start with "a" (e.g., a001 and a982) are not counted in the bonus.
    - **The highest score after adding the bonus points will not exceed 100**

The TAs will grade everything and regrade them upon request. If you have a re-grading request, please contact the TAs directly.

# Tentative Schedule

| Week | Date | Note | Lecture | Textbook |
|---|---|---|---|---|
| 1 | 2/18 | | Course Introduction | |
| | 2/20 | | Review of C | |
| 2 | 2/25 | | The Preprocessor | Ch 13.4- 13.7 |
| | 2/27 | | The Preprocessor | Ch 14.1 - 14.4 |
| 3 | 3/4 | | Writing Large Programs | Ch 15.1 - 15.2 |
| | 3/6 | | Writing Large Programs | Ch 15.3 - 15.4 |
| 4 | 3/11 | Homework 1 | Structures, Unions, and Enumerations | Ch 16.1 - 16.2 |
| | 3/13 | | Structures, Unions, and Enumerations | Ch 16.3 |
| 5 | 3/18 | | Structures, Unions, and Enumerations | Ch 16.4 - 16.5 |
| | 3/20 | | Advanced Uses of Pointers | Ch 17.1 - 17.2 |

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| 6 | 3/25 | | **Midterm Presentation** | |
| | 3/27 | | **Midterm Presentation** | |
| 7 | 4/1 | | Advanced Uses of Pointers | Ch 17.3 - 17.5 |
| | 4/3 | *Holiday* | | |
| 8 | 4/8 | *Holiday* | | |
| | 4/10 | Homework 2 | Advanced Uses of Pointers | Ch 17.5 - 17.6 |
| 9 | 4/15 | | Advanced Uses of Pointers | Ch 17.7 - 17.9 |
| | 4/17 | | Declarations | Ch 18.1 - 18.3 |
| 10 | 4/22 | | Declarations | Ch 18.4 - 18.6 |
| | 4/24 | | Program Design | Ch 19.1 - 19.2 |
| 11 | 4/29 | Upload Project Progress | Program Design (Online Video) | Ch 19.3 - 19.4 |
| | 5/1 | Upload Project Progress | Program Design (Online Video) | Ch 19.4 - 19.5 |
| 12 | 5/6 | | Low-level Programming | Ch 20.1 |
| | 5/8 | | Low-level Programming | Ch 20.2 - 20.3 |
| 13 | 5/13 | | Input/Output | Ch 22.1 - 22.3 |
| | 5/15 | | Input/Output | Ch 22.4 - 22.8 |
| 14 | 5/20 | | Input/Output | Ch 22.4 - 22.8 |
| | 5/22 | | Error Handling | Ch 24 |
| 15 | 5/27 | | No Class (**Final Exam** during Lab) | |
| | 5/29 | | No Class (**Final Exam** during Lab) | |
| 16 | 6/3 | | **Final Project Demo & Presentation** | |
| | 6/5 | | **Final Project Demo & Presentation** | |
| 17 | 6/10 | | **Final Project Demo & Presentation** | |
| | 6/12 | | **Final Project Demo & Presentation** | |