

Course Orientation

Contact Information

- Instructor: Dr. Min-Zheng Shieh
 - E-mail: mzshieh at nctu.edu.tw
 - Office Hours: 3GH @ EC330 (**by appointment only**)
- Course website:
 - e3.nctu.edu.tw
 - [2016 Winter Camp](#)
 - [2015 Summer Camp](#)
- Teaching Assistants:
 - [Pin-Chang Pan](#)
 - [Li-Cheng Lan](#)

Tracks

We provide different tracks for the students.

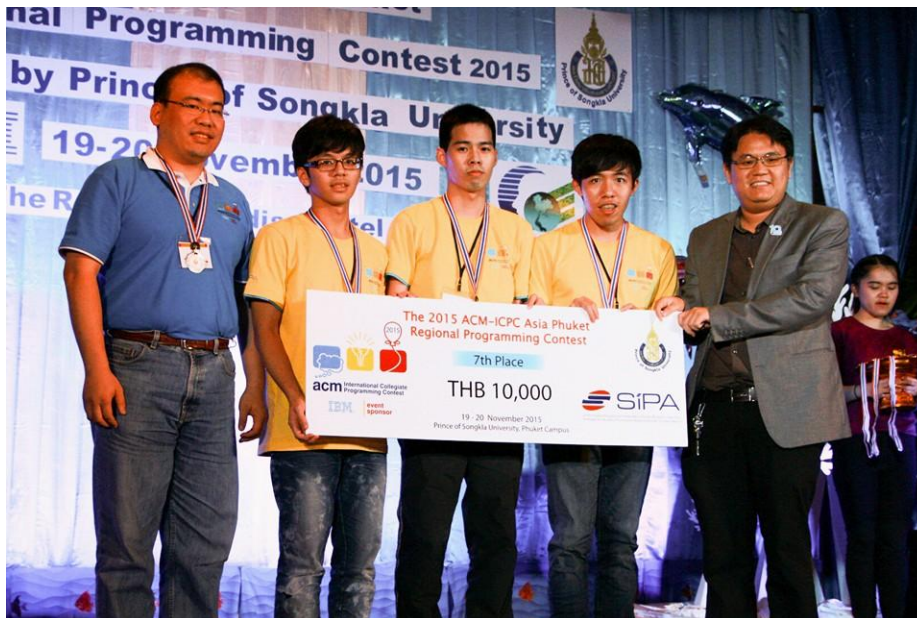
- **Beginner track**
 - Lectures for beginners will be on Friday nights (TBD)
- **Junior track**
 - Video lectures
 - The program assignments are the problems in 2015 Summer Camp
 - Discussion in class
- **Senior track**
 - Practice
 - Participation
 - Preparation

Prerequisites

- Basic ability to program in one of the following languages
 - C
 - C++
 - The course materials are mainly written in C++11
 - Java
- Basic mathematics
 - Arithmetics
 - Binary representation of integers
- Very basic knowledge of computer systems
 - Machine cycle
 - Memory
 - Call stack

Goal

- To improve students' ability in programming and problem solving.
- To encourage students to participate in programming contests or any other activities.



Textbook and Reference

- No textbook
- Reference
 - Hangouts
 - Websites
 - Lecture video
 - Competitive programming by Steven Halim & Felix Halim
 - Introduction to Algorithms by Cormen, Leiserson, Rivest, Stein

Tentative Topic

- Contest related topics
- I/O
- C++ STL & Java Collections
- Enumeration
- Data Structures
- Divide and Conquer
 - Sorting
 - Binary Search
 - Exponentiation by Squaring
 - Extended Euclidean Algorithm
- Greedy
- Dynamic Programming

Tentative Topic (cont.)

- Graph Representation
- Graph Traversal
- Trees and Disjoint Sets
- Minimum Spanning Trees
- Shortest Paths
- Network Flows
- Prime Numbers
- String Processing
- Advanced Data Structures
 - Treap
 - Splay Trees
- Computational Geometry

Grading Policy: Beginner Track

- Programming Assignments: 20%
 - There will be many problems.
 - For solving x problem, you will get $\min(x, 20)$ points.
- Midterm: 40%
- Final: 40%
- Bonus: up to 100%
 - If you can convince the instructor that you deserve it, then you will get it.
- No cheating
- No adjustment

Grading Policy: Junior Track

- Programming Assignments: 0%
- Discussion: 20%
 - Report your progress
 - Propose your ideas
 - Discuss why your program does not work
- Midterm: 40%
- Final: 40%
- Bonus: up to 100%
 - If you can convince the instructor that you deserve it, then you will get it.
- No cheating
- No adjustment

Grading Policy: Senior Track

- Participation & Practice: 50%
- Preparing midterm: 25%
- Preparing final: 25%
- Bonus: up to 100%
 - If you can convince the instructor that you deserve it, then you will get it.
- No cheating
- No adjustment
- Subject to change

Midterm and Final: Beginners and Juniors

- Use different problem sets
- At least 5 hours for at least 6 problems

Solved	Point
1	20
2	30
3	35
4	38
5	39
6	40

Summary

- You should not take this course if you cannot accomplish the first two programming assignments on your own.
- Beginner Track & Junior Track:
 - $15 + 1 + 1 = 55$
 - $20 + 1 + 1 = 60$
 - $20 + 1 + 2 = 70$
 - $20 + 2 + 2 = 80$
 - $20 + 3 + 3 = 90$
 - Getting >95 is not easy
 - Expected withdrawal rate: >30%
- Senior Track:
 - Please discuss the grading policy with the instructor before the end of course registration.