



HANYANG UNIVERSITY

2018 HISS Syllabus [C++ Programming]

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| Professor: | Dr. Michael Collins |
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| Home Univ.: | Dublin Institute of Technology, Ireland |
| Dept.: | Computer Science |

Description: This course introduces the basic concepts and fundamentals of C++ programming and the techniques used in Object-Oriented Programming. Students will learn how to develop well-designed, efficient and maintainable software using the C++ programming language. The course will be delivered using a combination of lectures and practical “hands-on” lab exercises with numerous programming examples.

Aims

The aim of this course is that the student becomes familiar with C++ Programming.

Lecture classes will teach the rules and syntax of C++. Each lecture will include many example programs to support the topics being taught.

Due to the practical nature of programming, a large emphasis will be placed on allowing the student to practice writing C++ programs and solve simple problems in a lab. The student will be given programming exercises to practice what they learn.

Objective:

Learning Outcomes

On completion of this course, the student will be able to:

1. Design, implement and execute a program using the C++ programming language
2. Test and debug a program to correct errors
3. Document a C++ program
4. Demonstrate an understanding of the principles and concepts of Object-Oriented Programming

Preparations: All electronic course material will be provided. Basic knowledge of using a computer with Windows/Mac OS/Unix-style Operating System required.

Hanyang International Summer School

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| Schedule: | Week 1 | <ul style="list-style-type: none"> • Overview, getting started with C++ • Simple C++ input/output program, Data types and variables • Control-statements, Loops • Arrays: defining and using arrays, single & multi-dimensional Assignment 1 |
| | Week 2 | <ul style="list-style-type: none"> • C++ Strings, Pointers in C++ • Functions • Introducing Objects and Classes • Constructors and Destructors, Method overloading • Class Attributes: Class data and method members Assignment 2 |
| | Week 3 | <ul style="list-style-type: none"> • Inline class member functions • Documentation of a Class, Separation of Class interface and Class implementation • Object-Oriented Programming Inheritance: Base and Sub-classes, Types of Inheritance, Multiple inheritance, Virtual Base Classes Assignment 3 |
| | Week 4 | <ul style="list-style-type: none"> • Object-Oriented Programming Polymorphism • Virtual functions, Abstract Base Classes • Testing, Improving program efficiency techniques Final Class Test |

| | Midterm (%) | Final (%) | Attendance (%) | Assignments (%) | Participation (%) | Etc. (%) |
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| Evaluation: | 0 | 20 | 10 | 60 | 10 | 0 |