DPT INFORMATIQUE
COMPUTER SCIENCE AND INFORMATION TECHNOLOGY
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INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

Software Development

Object Oriented Programming - C++ - Basis

IDENTIFICATION

CODE : IF-3-S1-EC-POO1
ECTS : 3.0

HOURS

Lectures :	10.5 h
Seminars :	10.0 h
Laboratory :	16.0 h
Project :	0.0 h
Teacher-student contact :	36.5 h
Personal work :	30.0 h
Total :	66.5 h

ASSESSMENT METHOD

Lab work evaluation:
- Written report (most of the time).
Final exam:
- Written final exam with documents allowed (duration: one hour and a half).

TEACHING AIDS

Copy of the lecture slides.

TEACHING LANGUAGE

French

CONTACT

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AIMS

The aim of this course is the mastery of the methodological tools and concepts essential to the design, the implementation, the test, and the maintenance of high quality software. The object oriented approach with the C++ programming language is used to reach our goal.
This course can be considered as an initiation to the C++ programming language. It requires little programming background though prior programming experience will make it easier.

Skills
Target skills are as follow:
- Applying methodologies for the development of software;
- Designing an object oriented software architecture;
- Designing, implementing and maintaining high quality software.

CONTENT

This course focuses on the core concepts of the object oriented approach: class, instance, method, attribute, single inheritance, polymorphism, early and late binding...
At the end of this teaching unit, you should be able:
- To manipulate the basic types of the C++ programming language (character, integer, float, array, structure, pointer, reference¿);
- To understand and to manipulate all the algorithmics forms of the C++ programming language;
- To master the class notion in a very simple contexts (visibility and data encapsulation, constructors, destructor, method call...);
- To master the inheritance concept (specialization, reuse, polymorphism...), key concept of the object oriented programming, in very simple situation (no template);
- To use properly the dynamic memory allocation in C++ using the new and delete operators;
- To build and to debug high quality object oriented programs using modularity (header file and implementation file);
- To understand the work of the C++ preprocessor.

BIBLIOGRAPHY

[1] Bjarne Stroustrup, The C++ Programming Language (Fourth Edition), Addison-Wesley, 2013, ISBN-13: 978-0321563842
[2] Bjarne Stroustrup, Programming: Principles and Practice Using C++ (Second Edition), Addison-Wesley, 2014, ISBN-13: 978-0321992789
[3] Stanley B. Lippman, Josée Lajoie, Barbara E. Moo, C++ Primer (Fifth Edition), Addison-Wesley, 2012, ISBN-13: 978-0321714114
[4] Stephen Prata, C++ Primer Plus (Sixth Edition), Addison-Wesley, 2011, ISBN-13: 858-0001090474

PRE-REQUISITE

Basic knowledge in algorithmics and in C programming language (IF-3-ALGO).