INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

DPT BIOSCIENCES
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Informatique

Object-oriented programming

IDENTIFICATION

CODE : BS-4-S1-EC-BMINFO5
ECTS : 3.0

HOURS

Lectures :	8.0 h
Seminars :	32.0 h
Laboratory :	0.0 h
Project :	0.0 h
Teacher-student contact :	40.0 h
Personal work :	35.0 h
Total :	75.0 h

ASSESSMENT METHOD

TEACHING AIDS

TEACHING LANGUAGE

English

CONTACT

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AIMS

At the end of this course, the student should be able to:
- Implement an algorithm with the C++ language
- Understand and automate the compilation chain (Makefile)
- Master manual memory management and the various ways to pass parameters
- Use a debugger (gdb) and a memory leak detector (valgrind)
- Organize a program with object-oriented programming
- Use STL containers and algorithms

CONTENT

- C++ syntax and semantics
- Compilation chain
- Declaration, definition
- Scope and lifetime
- Pointers and references, passing parameters
- Structure and management of memory
- Tools of the programmer (make, git, gdb, valgrind)
- Data structures and classes, attributes, methods
- Encapsulation
- Construction, destruction
- UML language
- Inheritance and polymorphism
- Standard library (STL)
- Design patterns
- Tests

BIBLIOGRAPHY

1. Le langage C++ - Stroustrup B - Campus Press
2. C++ la synthèse (concepts objets, standard ISO et modélisation UML) - Editions Dunod - 2000