

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF114-B	Advanced Computer Programming 2	2	2	0	2	3	5
Prerequisites							
Admission Requirements							
Language of Instruction	French						
Course Type	Compulsory						
Course Level	Bachelor Degree						
Objective	<p>In this course, the fundamental concepts covered in the first semester course "Introduction to Programming" are consolidated. Particularly the topics of pointers, dynamic memory allocation and management, introduction to algorithm analysis, fundamental principals of algorithms, sorting algorithms and algorithmic modeling are elaborated. In the course practice (lab sessions) C programming language and the Linux operating system are used.</p>						
Content	<ul style="list-style-type: none"> <li>- Introduction and Reminders</li> <li>- Dynamic Memory Allocation</li> <li>- Linked List</li> <li>- Stack and Queue</li> <li>- Algorithmic analyze</li> <li>- Fundamentals: Recursion, search, divide and conquer</li> <li>- Sorting algorithmes</li> <li>- Algorithmic modeling</li> </ul>						
References	<p>Algorithms, Robert Sedgewick and Kevin Wayne, Pearson, 2011  The Algorithm Design Manual, Steven S. Skiena, Springer, 2008  Introduction to Algorithms, Cormen, Leiserson, Rivest &amp; Stein, MIT Press, 2009  Understanding and Using C Pointers, Richard Reese, O'Reilly Media, 2013</p>						

## Theory Topics

Week	Weekly Contents
1	Introduction and Reminders
2	Dynamic Memory Allocation
3	Linked List
4	Linked List Operations
5	Stack and Queue
6	Introduction to Algorithmic Analysis
7	Big-Oh Notation
8	Midterm Exam
9	Fundamentals : Recursion versus Iteration
10	Fundamentals : Search, divide and conquer
11	Sorting Algorithms
12	Algorithmic Analysis of Sorting Algorithms
13	Algorithmic Design
14	Algorithmic Design & Current Examples