Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF114-A	Advanced Computer Programming	2	2	0	2	3	5

Prerequisites	
Admission Requirements	

Language of Instruction	French
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	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.
Content	- Introduction and Reminders - Dynamic Memory Allocation - Linked List - Stack and Queue - Algorithmic analyze - Fundamentals: Recursion, search, divide and conquer - Sorting algorithmes - Algorithmic modeling
References	Algorithms, Robert Sedgewick and Kevin Wayne, Pearson, 2011 The Algorithm Design Manual, Steven S. Skiena, Springer, 2008 Introduction to Algorithms, Cormen, Leiserson, Rivest & Stein, MIT Press, 2009 Understanding and Using C Pointers, Richard Reese, O'Reilly Media, 2013

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