

Course Syllabus

1. Course number and name: 020IF2CI3 Programming 2
2. Credits and contact hours: 4 ECTS credits, 3 x1:15 course hours.
3. Instructor's or course coordinator's name: Tony Nicolas
4. Text book, title, author, and year: Option Informatique, R. Mansauy, Vuibert 2014
 - a. other supplemental materials:
Professor textbook and course material
5. Specific course information
 - a. catalog description:
Programming and algorithms with Categorical Abstract Machine Language (CAML) – Array – List – LIFO and FIFO structures - Tree – Sorting algorithms– Temporal complexity - deterministic and non-deterministic finite state automata – regular Expressions - propositional logic.
 - b. prerequisites:
 - c. Required/Elective/Selected Elective: Required
6. Specific goals for the course
 - a. Specific outcomes of instruction:
 - Explain and write the code for the basic sorting algorithms with CAML
 - Analyze and calculate time complexity of sorting algorithms.
 - Write recursive code.
 - Analyze and write the code for recursive sorting algorithms using recursive functions
 - Analyze and write recursive code for binary tree
 - Manipulate regular expression
 - Construct automata to recognize given language
 - Evaluate logical expressions
 - b. KPIs addressed by the course.

KPI	c2	k2
Covered	x	x
Assessed	x	x
Give Feedback	x	x

7. Topics and approximate lecture hours :

- CAML (4 Lectures)
- Array and iterative algorithms, FIFO – LIFO (4 Lectures)
- Time complexity and asymptotic analysis of an algorithm (2 Lectures)
- Bubble sort : algorithm and time complexity (1 Lecture)
- Selection sort : algorithm and time complexity (1 Lecture)
- Simple and binary insertion sort: algorithms and time complexity (1 Lecture)
- Recursive algorithms: concept and examples (2 Lectures)
- Merge sort : algorithm and time complexity (1 Lecture)
- Quick sort : algorithm and time complexity (1 Lecture)
- Lists : constructions and recursive algorithms, LIFO- FIFO (6 Lectures)
- Binary tree (5 Lectures)
- Heap sort (1 Lecture).
- Deterministic and non-deterministic finite state automata – regular Expression – automata and language recognition (10 Lectures).
- Propositional logic (3 Lectures)