

2021-2022	Common Trunk	Year 1 - Sem. 2
INFO103	Computer Science II	Mandatory
ECTS: 3	Instructors: Dr. Bassam ETER, Eng. Ibrahim Joumaa	Language: English/French
Total hours: 39 h	Period : March-June	

Learning of an imperative programming language. Application: C#.Net. We start by presenting the basic types in C#, then the arithmetic and logical operators. Control statements if / else and switch / case. Input/output instructions. Then we develop various control loops: for, while and do/while. We then go to structured types: one-dimensional and two-dimensional arrays and structures (*struct*). We then present Collections of the .Net library (*ArrayList*, *Stack*, *Queue*, *SortedList*). We then program binary and text data files through the .Net System.IO class library. We then program methods (functions) as well as recursion.

#### Learning outcomes:

- Understand the nature of programming as human activity
- Learn and experience main components of programming process
- Understand main control structures of procedural programming languages
- Learn and being able to use major programming patterns
- Experience and use modern object-oriented programming paradigm
- Understand the principles of data storage and manipulation
- Get practical knowledge of a popular programming language like C#.Net.
- Get prepared for more advanced programming courses.

#### Content:

- Types, operators and basic Instructions in C# : Basic types – Operators. Input/Output: *Console* class. if/else instruction – Conditional operator ?: Multiple choice switch/case. Control loops in C#. for - while - do-while - break and continue instructions
- Arrays in C#: One-dimensional arrays – foreach instruction. The .Net Array class. Two-dimensional arrays and matrixes
- Structures in C# : Definition of a structure type. Access to fields
- Collections in C# : *ArrayList* – *Queue*– *Stack*- *SortedList*
- Data files in C# : Text files (*StreamReader* and *StreamWriter* classes). Binary files (*FileStream*, *BinaryReader*, *BinaryWriter* classes). Files and directories control in C# .Net
- Methods (functions) : Parameters and passing mode (by value, by reference). return type. Recursion.

#### References:

- Bassam ETER , Langage C#.Net.

#### Evaluation Method:

Assessment in the following areas will be converted to points, to compute your final grade in this course:

- Mid-Term
- Final Exam
- Home Works

#### Description :

Apprentissage de la programmation impérative dans un langage. Application : C#.Net. On commence par la présentation des types de base en C#, puis les opérateurs arithmétiques et logiques. Puis les instructions de contrôle if/else et switch/case. Ensuite les instructions d'entrée/sortie. On développe ensuite les diverses boucles de contrôle : for, while et do/while. On passe ensuite aux types structurés : tableaux unidimensionnels et bidimensionnels, et structures (*struct*). On présente ensuite les collections de la librairie .Net (*ArrayList*, *Stack*, *Queue*, *SortedList*). On programme ensuite les fichiers de données textes et binaires moyennant les classes de la librairie System.IO de la plateforme .Net. On programme ensuite les méthodes (fonctions) ainsi que la récursivité.