IIC2233 ADVANCED COMPUTER PROGRAMMING

Credits and contact hours: 10 credits / 10 hours (3 h. Lectures; 7 h. Individual learning experience)

Instructor’s name: Juan Felipe Calderón

Course coordinator’s name: Juan Felipe Calderón

Textbook:

Course Catalog Description:
This course teaches some techniques to design, code, debug and test computer programs. Particularly, this course teaches some object-oriented programming advanced constructions (not included in prerequisite course). Students must use various programming tools to develop their own programs.

Prerequisite Courses: IIC1103 Introduction to Computer Programming

Co-requisite Courses: None

Status in the Curriculum: Required

Course Learning Outcomes:
1. Create object-oriented designs for simple problems.
2. Apply object-oriented concepts (inheritance, polymorphism, interfaces), and fundamental data structures (linked lists, stacks, queues, binary trees and hash tables), to design and write complex programs using an object-oriented programming language (e.g. C#).
3. Write programs using other programming models: multithreading and event-driven programming.
4. Use an integrated software development environment (e.g. Microsoft Visual Studio) to edit, compile and debug programs.
5. Design and construct software applications with a complex graphical user interface (GUI).
Relation of Course to ABET Criteria:

a. Knowledge of mathematics, science and engineering

c. Design a system, component, or process

e. Identify, formulate, and solve engineering problems

f. Professional and ethical responsibility

i. Recognition of the need for, and an ability to engage in life-long learning

k. Techniques, skills, and modern tools for engineering practice.

Topics covered:

1. Introduction to C# language and .Net Framework.
2. Advanced OOP concepts: inheritance and polymorphism.
3. Basic data structures: lists, trees, queues, stacks.
4. Multithreading programming.
5. Event-driven programming.
6. GUI development over Windows Presentation Foundation.
8. Reflection.