IIC2113 DETAILED SOFTWARE DESIGN

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

Instructor's name: Andrea Vásquez

Course coordinator's name   Andrea Vásquez

Textbook:
- Larman, C. (2004) Applying UML and patterns. 3rd edition. Prentice Hall.
- Freeman, E.; Freeman, E.; Sierra, K.; Bates, B. (2004) Head first patterns. O'Reilly Media.
- Nilsson, J. (2006) Applying domain-driven design and patterns. Addison-Wesley professional.

Course Catalog Description: This course teaches main software design patterns to design and construct high-cohesive and low-coupled systems, and to analyze systems from efficiency, reliability and maintainability.

Prerequisite Courses: IIC2143 Software engineering

Co-requisite Courses: None

Status in the Curriculum: Required

Course Learning Outcomes:
1. Apply techniques and tools of software constructions, including state-based and table-driven approaches to low-level software design.
2. Use design patterns in software design.
3. Develop effective object-oriented design and programming.
4. Analyze software in order to improve efficiency, reliability and maintainability.
5. Change designs using rigorous change control approaches.
6. Use reverse engineering techniques to obtain the design of a software product.

Relation of Course to ABET Criteria:
a. Knowledge of mathematics, science and engineering
e. Identify, formulate, and solve engineering problems
k. Techniques, skills, and modern tools for engineering practice.

Topics covered:

1. Detailed design and software construction (in depth).
2. Design patterns and refactoring (in depth).
3. Design analysis using internal quality criteria.
4. Performance and maintainability improvement.
5. Reverse engineering.
6. Disciplined approaches to design modifications.