ENSF 614

Advanced System Analysis and Software Design

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- **Office Hours:**
  - By appointment

What this course is about

This course focuses on principles, concepts, and techniques of software analysis and design at different levels (the code level and application level). In summary, topics in this course will be divided in three parts:

- Part I:
  - Principles of low-level software design concepts. In ours Software Engineering Program, this part is taught with the assumption that students are familiar with C and C++ language. Since students in this class, don't have C/C++ background, this part starts with an introduction to this languages, followed by detail discussions on the elements of low-level software design.
- Part II:
  - Principles and of concepts Software Design Patterns.
- Part III:
  - Principles and techniques of application-level software analysis and software design. This part starts with an overview of software process lifecycle, followed by advanced topics on system analysis and software design concepts, and modelling techniques for different methodologies.

Pedagogic Approach

- The two parts of the course will be similar to many other course that you have taken so far and will have weekly lab assignments.
  - Please, notice that lab session are only one hour, and you should start your assignment before coming to online lab session and using this period for asking possible questions.
- The third part will use an Active Teaching & Learning approach:
  - Lectures are combined with work periods. Means lectures are followed by combined group with work periods:

Course Evaluation

- Final grades will be evaluated based on:
  - Assignments 20%
  - Quizzes 45%
  - Term Projects 35%

Term Projects and Assignments

- Assignments Objective:
  - Practicing and learning principles of software design, software engineering tools, methods, and techniques.
- Projects:
  - The term project(s) are designed to that allows students to practice different software development methodologies.

Textbook

- There is no required textbook for this course. However the following textbooks are recommended as related references:
  - C in a Nutshell; Peter Prinz and Tony Crawford, second edition.
  - C++ Primer, Stanley B. Lippmanm Josse Lajoe, and Barbara Moo, 5th edition.
  - *Software Engineering: a Practitioner's Approach*, 6th edition, Roger Pressman, McGraw Hill.
  - Object-Oriented Software Engineering, Practical software development using UML and Java. Timothy C Lethbridge, Robert Laganière.
  - Head First Design Patterns, Elisabeth Freeman and Kathy Sierra, O Reilly Media Inc.
  - *UML Distilled Third Edition, by Martin Flower. A brief guide to the standard object modeling language.*