SE 325

Introduction to Software Engineering

Course: SE325
Time/Day: 5:45 – 9:00 PM, Thursday.
Location: Loop Campus

Instructor: Dr. Atef Bader
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Office hours: Thur, 4:45pm - 5:45pm and Thur, 9:00pm - 9:30pm

Course Description
This course introduces students to requirements elicitation, analysis and design activities of a use-case driven and architecture-centric software development process. The course discusses in detail the basic concepts, and methodology to capture requirements and how to map these requirements into design elements. Topics will include software development processes, Iterative and Agile processes, Unified Process, UML, requirements elicitation and specification, developing conceptual models of the problem domain of a software product, building design models, and using the object-oriented methodology for building modular, reusable, and extensible software artifacts.

Textbook

- Applying UML and Patterns, 3rd edition, Larman, Prentice Hall/Pearson, 2005. ISBN: 978-0131489066

Prerequisites
CSC 212 or CSC 224 or CSC 396 or CSC 242 or CSC 262 or IM 330 or CSC 243

Grading
Assignments(4) - 60%, Midterm Exam(4/28/16) - 40%

Grading Scale

A : total >= 93
A-: 93 > total >= 90
B+: 90 > total >= 87
B : 87 > total >= 83
B-: 83 > total >= 80
C+: 80 > total >= 77
C : 77 > total >= 73
C-: 73 > total >= 70
D+: 70 > total >= 67
D : 67 > total >= 63
D-: 63 > total >= 60
F : 60 > total

Lecture Notes:

Will be posted online on a weekly basis.

Topics:

- Software Engineering Overview
  - Engineering Software Products
  - Software Development Life Cycle
  - Object-Oriented Software Engineering
  - Structural and Behavioral properties of Software Products
  - Overview of System Analysis & Design
- Software Development Processes
  - Waterfall Process vs. Spiral Process
  - Iterative, Evolutionary, and Agile processes
- Unified Process (UP)
  - Object-Oriented Methodology
  - UP Phases
  - UP Disciplines
  - Refinements
- Unified Modeling Language (UML) for building software artifacts
- Requirements Elicitation
  - Gathering Requirements
  - Categories of Requirements
  - Glossary and Supplementary Specifications
  - Requirements Organization in UP artifacts
- USE-CASE Modeling for Requirements
  - Use-Case Diagrams: Use Cases, Scenarios and Actors
  - Use-Cases Formats: Brief , Casual, and Fully Dressed
  - System Sequence Diagrams and Operation Contracts
- Analysis
  - Structured Analysis and Object-Oriented Analysis
  - Domain modeling
  - Finding Conceptual Classes
  - Sketching Class Diagrams
- Design
  - Modular, reusable, and extensible software
  - Design Modeling
  - System Design and Object Design
  - Capturing Static Structures and Dynamic Behavior of the system using UML diagrams
  - Logical Architectures and Layers
  - Sequence and Communication Diagrams
  - Sketching Class Diagrams
- Elements for Reuse
  - Code Reuse vs. Design Reuse
  - Architectural Patterns
  - Design Patterns
  - Frameworks