COMP 3700, Software Modeling and Design

Credit hours: 3 lecture
Contact hours: 3 lecture

Catalog Description: Current processes, methods, and tools related to modeling and designing software systems. Communication, teamwork, and a design experience are integral course experiences.

Prerequisites: COMP 2710
Corequisites: None

Required Course (CSCI, SWEN)

Instructor or Course Coordinator: Dr. Levent Yilmaz

Required Textbook
James Rumbaugh et al., Object-Oriented Modeling and Design with UML, 2005

Reference Materials
Erich Gamma et al., Design Patterns, 1995

Course Outcomes
The student will be able to
• understand the role of analysis and design in the software engineering lifecycle.
• develop object-oriented designs by applying established design principles.
• develop use-case and scenario descriptions of the requirements.
• develop richer descriptions of design models using UML diagrams.
• understand the role and influence of design patterns and frameworks in software design.
• evaluate the quality of design models.

Topics Covered
• Introduction to software analysis and design (3 hours)
• Object-oriented analysis with use-case modeling (4 hours)
• Conceptual domain modeling (2 hours)
• Architectural styles and design (3 hours)
• Responsibility-driven object interaction design (3 hours)
• Class design diagrams, association, aggregation, inheritance (1.5 hours)
• Dynamic behavior modeling with UML state and activity diagrams. (3 hours)
• OO frameworks and software design patterns (9 hours)
• Design quality evaluation using OO design metrics (3 hours)
• Component-based software design with UML component and deployment graphs (3 hours)
• Quizzes and Exams (4.5 hours)
• Group project presentations (6 hours)
Course Requirements

- Project (40%)
- Quizzes and Exams (30%)
- Final Exam (30%)

Syllabus prepared: Spring 2016