CS 5550: Software Architecture and Design

Semester Hours: 3.0  
Contact Hours: 3
Coordinator: Robert Dyer
Text: Pattern-Oriented Software Architecture, A System of Patterns: Vol 1
Author(s): Frank Buschmann
Year: 2000

SPECIFIC COURSE INFORMATION

Catalog Description:
Software Architecture and Design. Principles and concepts of analyzing and designing large software systems. Analysis of software systems. Designing software systems using design patterns and object-oriented techniques. Prerequisite: Grade of C or better in CS 3540 or Admission to MS in Computer Science program. Credit cannot be earned for both CS 4550 and CS 5550.

Course type: Elective

SPECIFIC COURSE GOALS

- I can select and use appropriate design patterns.
- I can specify a software system's architecture using UML.
- I can understand separation of concerns and its impact on software design.
- I can architect a software system based on the given requirements.
- I can perform a design review on a software system.
- I can analyze relevant research and communicate my findings.

LIST OF TOPICS COVERED

- Introduction and Importance of Design
- Software Architecture
  - Components and connectors
  - Constraints
  - Composition
- Unified Modeling Language
- Software Design
- Design reviews
- Inter-operability
- Separation of concerns

- Object-oriented Design
  - Design patterns
  - Information hiding
  - Interfaces
  - Inheritance and polymorphism